Nature displays her most common mineral, quartz, in this beautiful crystal cluster.
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MINERALS AND MINERAL LOCALITIES OF UTAH

by Kenneth C. Bullock

INTRODUCTION

There has long been widespread interest by mineralogists and geologists in the minerals of the State. This interest is increasing both because of renewed activity in old mining camps and because of Utahns and tourists who seek relaxation and adventure out-of-doors. Evidence of this interest is the organization of many rock and mineral societies.

This current publication of the minerals of the state was preceded by my two earlier compilations: "Minerals and Mineral Localities of Utah", 1960, and "Minerals of Utah", 1967. The present volume is the result of updating to the year 1980, and revisions and enlargements of the earlier editions. Mineral listings of the state have increased to 706 of which 134 are duplicate names. A few hydrocarbons and a few rock terms such as obsidian have been included, but coal, petroleum, and natural gas are not listed. Minor occurrences of many minerals have been omitted, and only a few rock-forming mineral occurrences are included. The main helium and carbon dioxide occurrences are included.

In Chapter I mining districts are listed alphabetically both for each county and for the State.

Chapter II is devoted to county listings of mining districts, mines, and mineral localities, with the minerals found at each mine or locality. Most mining districts and mineral localities in the county lists are large enough to warrant further subdivision into mines and specific mineral localities. Minerals which are characteristic of the entire locality are listed as occurring in the locality as a whole, along with those for which the specific area (mine, for instance) is not known. Other minerals, however, that occur in a particular part of a larger district or locality, are listed only under the area specified.

Chapter III consists of an alphabetical listing of 706 minerals found in Utah including a brief description of each mineral, followed by a listing of the occurrences of each mineral in the State.

Following the Bibliography is an Appendix, including six subdivisions with alphabetical listing of minerals under the following headings: (a) minerals of the state; (b) minerals by each county; (c) crystal system; (d) chemical class; (e) selected metallic minerals of the state; (f) selected metallic minerals of each county.

CHAPTER I

MINING DISTRICTS OF COUNTIES AND THE STATE OF UTAH

The districts listed below are used in an informal sense. Areas and districts as they appear in other publications may be inter-changed.

COUNTY LISTINGS

BEAVER COUNTY

Antelope District (Mineral Range).
Beaver Lake District (Beaver Lake Mountains).
Bradshaw District (Mineral Range).
Fortuna District (Tushar Mountains).
Gordon District (Tushar Mountains).
Granite and North Granite Districts (Mineral Range).
Indian Peak District (Needle Range).
Lincoln District (Mineral Range).
McGarry District (Mineral Range).
Newton District (Tushar Mountains).
Pine Grove District (Wah Wah Mountains).
Pruss (Newhouse) District (San Francisco Mountains).
Rocky District (Rocky Range).
San Francisco (Frisco) District (San Francisco Mountains).
Star and North Star Districts (Star Range).
Sterling District (Red Buttes).
Sulphur District (Wah Wah Mountains).
Washington District (Needle Range).

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BOX ELDERS COUNTY

Ashbrook District (Grouse Creek Mountains).
Box Elder District (Wasatch Mountains).
Crater Island District (Crater Island).
Lucin District (Pilot Range).
Newfoundland District (Newfoundland Mountains).
Park Valley District (Raft River Mountains).
Promontory District (Promontory Mountains).
Rosebud District (Grouse Creek Mountains).
Sierra Madre District (Wasatch Mountains).
Willard District (Wasatch Mountains).

CACHES COUNTY

Paradise District (Bear River Range).
Richmond District (Bear River Range).

CARBON COUNTY

Tidewell and Rideout District (West Tavaputs Plateau).

DAGGETT COUNTY

No Organized Mining Districts.

DAVIS COUNTY

Farmington District (Wasatch Mountains).

DUCHESENE COUNTY

Castle Peak District (Uinta Basin).

EMERY COUNTY

Cedar Mountain District (Cedar Mountain).
Emery (Lost Springs) District (Red Plateau).
Green River District (S. W. Green River).
San Rafael District (San Rafael Swell).

GARFIELD COUNTY

Colorado River District (Colorado River).
Coyote Creek (Antimony) District (Escalante Mountains).
Little Rockies District (Henry Mountains).
North Wash District (Henry Mountains).
Trachyte District (Henry Mountains).

GRAND COUNTY

La Sal District (North Mountain, La Sal Mountains).
Little Grand District (S.E. Green River).
Miners Basin District (North Mountain, La Sal Mountains).
Polar Mesa District (Polar Mesa).
Richardson District (Waring Creek).
Thompsons District (S. E. Thompsoons).
Wilson Mesa (Wheeler Desert) District (Wilson Mesa).
Yellow Cat District (W. part of Thompsoons District).

IRON COUNTY

Escalante District (Mt. Escalante).
Gold Springs District (Hamlin Valley).
Iron Springs District (Iron and Granite Mountains, Three Peaks).
Pinto Iron (Silver Belt) District (Pinto).
Stateline District (Hamlin Valley).

JUAB COUNTY

Deseret (Desert Mountain) District (Desert Mountain).
Detroit (Drum, Joy) District (Drum Mountains).
Fish Springs District (Fish Springs Mountains).
Juab District (Wasatch Mountains).
Mona District (Long Ridge).
Mt. Nebo (Timmons) District (Wasatch Mountains).
North Tintic District (East Tintic and Boulter Mountains).
Spring Creek District (Deep Creek Mountains).
Tintic District (East Tintic Mountains).
Trout Creek (Johnson Peak) District (Deep Creek Mountains).
West Tintic District (West Tintic Mountains).

KANE COUNTY

Colorado River District (Colorado River).

MILLARD COUNTY

Detroit (Drum, Joy) District (Drum Mountains).
Gordon District (Pavant Mountains).
Leamington (Oak City) District (Canyon Mountains).
Saw Back District (W. of Sevier Lake).

MORGAN COUNTY

Argenta District (Wasatch Mountains).
Hardscrabble (Mill Creek) District (Wasatch Mountains).
Morgan District (Wasatch Mountains).
PIUTE COUNTY

Gold Mountain (Kimberly) District (Deer Creek, Tushar Mountains).
Marysvale District (Marysvale Uranium Area).
Mt. Baldy District (Cottonwood Creek, Tushar Mountains).
Ohio District (Bullion Canyon, Tushar Mountains).

RICH COUNTY

Swan Creek (Garden City) District (Bear River Range).

SALT LAKE COUNTY

Big Cottonwood District (Wasatch Mountains).
Bingham (West Mountain) District (Oquirrh Mountains).
Hot Springs (Adams) District (Wasatch Mountains).
Little Cottonwood (Alta) District (Wasatch Mountains).
Lower Placer District (Oquirrh Mountains).
Smelter District (Oquirrh Mountains).

SAN JUAN COUNTY

Big Indian District (Big Indian Wash-Lisbon Valley Area).
Cottonwood Canyon District (N. of Bluff).
Monticello (Blue Mountain) District (Abajo Mountains).
Monument Valley (Monumental) District (Monument Valley).
Paradox Valley District (Paradox Valley).
Red Canyon District (Red Canyon).
White Canyon District (White Canyon).

SANPETE COUNTY

No Organized Mining Districts.

SEVIER COUNTY

Henry District (Antelope Range).
Salina Creek District (Salina Creek).

SUMMIT COUNTY

Marble (Silver Creek) District (Wasatch Mountains).
Park City (Uinta) District (Wasatch Mountains).

TOOELE COUNTY

Bingham (West Mountain) District (Oquirrh Mountains).
Blue Bell District (Sheeprock Mountains).
Columbia District (N.E. Sheeprock Mountains).
Dugway District (Dugway Range).
East Erickson District (W. Sheeprock Mountains).
Erickson (Black Crook) District (Simpson Mountains).
Free Coinage District (Stansbury Mountains).
Gold Hill (Clifton) District (Deep Creek Mountains).
Granite Mountain District (Granite Mountain).
Grantsville (Third Term) District (Stansbury Mountains).
Greeley District (Topliff Hill).
Lakeside District (Lakeside Mountains).
Mercur (Camp Floyd) District (Oquirrh Mountains).
North Tintic (Boulter, Caledonia, Oasis) District (Boulter Mountains).
Ophir District (S. W. Oquirrh Mountains).
Osceola District (Thorpe Hills).
Rush Valley (Stockton) District (W. Oquirrh Mountains).
Silver Island (Silver Islet) District (Silver Island Mountains).
Tooele District (W. Oquirrh Mountains).
Willow Springs District (Deep Creek Mountains).

UINTAH COUNTY

Brush Creek District (Uinta Mountains).
Carbonate District (Uinta Mountains).
Green River District (Cub Creek).
Uteland Knoll District (Ouray).

UTAH COUNTY

Alpine District (Wasatch Mountains).
American Fork District (Wasatch Mountains).
East Tintic District (East Tintic Mountains).
Lehi District (Lake Mountain).
North Tintic (Caledonia, Oasis) District (East Tintic Mountains).
Payson District (Wasatch Mountains).
Provo District (Wasatch Mountains).
Santasquin District (Wasatch Mountains).
Silver Lake District (Wasatch Mountains).
Spanish Fork District (Wasatch Mountains).
Utah District (Long Ridge).

WASATCH COUNTY

Blue Ledge District (Bald Mountain).
Elkhorn District (E. Keetley).
Rhodes Plateau (Woodland) District (Uinta Mountains).  
Snake Creek (Howland, White Pine) District (Wasatch Mountains).

**WAYNE COUNTY**

Miners Mountain District (Miners Mountain).

**WASHINGTON COUNTY**

Bull Valley District (Bull Valley).
Santa Clara District (Santa Clara).
Silver Reef (Harrisburg) District (Leeds).
Tutsagubet District (Beaver Dam Mountains).

**WEBER COUNTY**

Fremont Island District (Fremont Island).
Sierra Madre District (Wasatch Mountains).
Weber (Junction) District (Wasatch Mountains).

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**CHAPTER II**

**MINING DISTRICTS OF UTAH**

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<td>Mineral Localities Listed by County</td>
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<tr>
<td><strong>BEAVER COUNTY</strong></td>
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<tr>
<td><strong>ANTELOPE DISTRICT</strong> (Mineral Range)</td>
<td>barite, calcite, galena, magnetite, malachite.</td>
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<tr>
<td><strong>BEAVER</strong> (near) - hyalite.</td>
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<td><strong>BEAVER LAKE DISTRICT</strong> (Beaver Lake Mountains) - andalusite, barite, diaspore, plancheite.</td>
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<td><strong>Bat Ridge</strong> - calcite, garnet, magnetite.</td>
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<tr>
<td><strong>Beaver Copper, Copper Mountain Mines</strong> - azurite, malachite.</td>
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<tr>
<td><strong>Beaver-Harrison, OK mines</strong> - azurite, bornite, chalcocite, chalcopyrite, chrysocolla, copper, covellite, cuprite, jasper, limonite, malachite, molybdenite, powellite, pyrite.</td>
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</table>

**Black Rock mine** - specular hematite.  
**Galena mine** - galena.  
**Iron Mountain Pass deposits** - hematite.  
**Skylark mine** - azurite, calcite, chalcopyrite, chrysocolla, copper, cuprite, diopside, garnet, hematite, malachite, magnetite, muscovite, pyrite.  
**West Spring** - brucite, clinohumite, ludwigite, saïbellite.  

**BLUE MOUNTAINS.**  
**Black Jack (Skougard) claims** - pyrolusite, rhodochrosite.  
**Susie Q (Iron Lily) claims** - calcite pyrolusite, rhodochrosite.  
**T. 29 S., R. 12 W.** - hematite, magnetite.
BLUE VALLEY - black agate with blue bands.

BRADSHAW DISTRICT (Mineral Range) - amethyst, clinozoisite, tourmaline, tremolite, wollastonite.

Casie mine - anglesite, aragonite, argentite, aurichalcite, cerussite, chalcopyrite, cuprite, galena, gold, limonite, magnetite, malachite, pyrite, sphalerite, sulfur.

Hecla mine - argentite, chalcopyrite, galena, gold, pyrite.

Jolly Bay mine - gold, limonite.

Nip and Tuck mine - argentite, chalcopyrite, galena, gold, pyrite.

2 R's group - epidote, fluorite, garnet, idocrase, malachite, scheelite, serpentine.

ENGLISH SPRING (Wah Wah Mountains) - hematite, limonite.

FORTUNA DISTRICT (Tushar Mountains).
Rocky Hollow - gold, limonite, pyrite.

FRISCO DISTRICT (See SAN FRANCISCO DISTRICT)

GORDON DISTRICT.

Sulphurdale - epsomite, marcasite, pyrite, sulfur.

GRANITE and NORTH GRANITE DISTRICTS (Mineral Range).

Beaver View mine - argentite, cerussite, chrysocolla, galena, gold, smithsonite, sphalerite.

Big Pass (Pass Canyon) group - argentojarosite, aurichalcite, barite, calcite, cerussite, epidote, fluorite, galena, garnet, gold, idocrase, jarosite, limonite, malachite, molybdenite, pyrite, scheelite, tremolite, tremolite, wola­

Bismuth (Major) mine - amphibole, bismuthinite, fluorite, idocrase, molybdenite, pyrite, scheelite.

Burnt Hollow group - epidote, galena, hematite, limonite, magnetite, scheelite.

Contact group - barite, bornite, chalcopyrite, epidote, fluorite, garnet, gold, hematite, molybdenite, scheelite.

Garnet group - almandite, epidote, fluorite, gold, malachite, scheelite.

King-of-the-Hills group - hematite, malachite, scheelite.

Major Fault group - scheelite.

Miller mine - apatite, beryl, helvite, thulite, topaz.

Molly group - epidote, garnet, pyrite, scheelite.

Oak group - epidote, garnet, idocrase, scheelite.

Oak Basin group - epidote, garnet, idocrase, scheelite.

Rattler group - calcite, epidote, garnet, idocrase, scheelite.

Scheelite group - beryl, epidote, garnet, scheelite.

Sunrise property - thorium, rare earths.

Ward group - epidote, garnet, idocrase, scheelite.

INDIAN PEAK DISTRICT (Needle Range) - argentite, cerussite, fluorite, galena.

Big Pinto Spring - alunite.

Blue Bell, Cougar Spar, Dugout, JB, Nooday, Lost Sheep, Utah mines - calcite, fluorite, quartz.

Steelville, Spor properties - pyrolusite.

LINCOLN DISTRICT (Mineral Range).

Creeke mine - argentite, anglesite, azurite, bornite, calcite, cerussite, chalcopyrite, chrysocolla, clinozoisite, copper pitch, epidote, fluorite, galena, garnet, hematite, idocrase, limonite, magnetite, malachite, opal, pyrite, quartz, tourmaline, tremolite, scheelite, wolla­

Rattler Iron claim - limonite, magnetite.

Lincoln (Rawlins) mine - anglesite, argentite, chalcopyrite, chrysocolla, galena, hematite, limonite, magnetite, malachite, pyrite, smithsonite, sphalerite.

MCGARRY DISTRICT (Mineral Range) - barite, calcite, galena, magnetite, malachite.

MILFORD (near) - opal

MOONEY SPRINGS - topaz.

NEWHOUSE DISTRICT (See PRUESS DISTRICT)

NEWTON DISTRICT (Tushar Mountains).

Black Rock (Shortwell) deposit - pyrolusite.

Indian Creek - autunite, fluorite, galena, gold, pyrite, tobernite.

Louise claims - huebnerite, quartz.

North Creek (head) - wolframite.

Rob Roy mine - gold, pyrite, quartz.

Sheep Rock mine - alunite, argentite, cerussite, calcite, cerargyrite, fluorite, limonite, pyrite, sericite, tellurium mineralization.

Sniffer and Mystery claims - autunite, fluorite, mela­tomerbrite, tobermite, uranophane.

NORTH STAR DISTRICT (See GRANITE DISTRICT).

NORTH STAR DISTRICT (See STAR DISTRICT).

PINE GROVE DISTRICT (Wah Wah Mountains) - alu­nite, anglesite, cerussite, galena, molybdenite, pyrite, pyrolusite.

Blown Peak - alunite.

Central Wah Wah Iron deposits - limonite.
Daisy mine - autunite, fluorite, uraninite.
Emma prospect - hematite, limonite.
Iron Queen (Mooney, Wilson, Last Chance) prospects - autunite, fluorite, hematite, limonite.
Iron King prospect - hematite, limonite.
Pine Grove Associates mine - chalcopyrite, fluorite, galena, garnet, hubeberite, magnetite, molybdenite, sphalerite, topaz.
Producer mine - autunite, fluorite, uraninite.
Staats (Monarch) mine - autunite, carnotite.

PRUSS (NEWHOUSE) DISTRICT (San Francisco Mountains).

Blackbird group, Cactus mine - anhydrite, azurite, barite, chalcopyrite, cosalite, goethite, limonite, magnetite, malachite, molybdenite, pyrite, quartz, serpentine, siderite, stilbite, tetrahedrite, tourmaline, wollastonite.
Cactus Gulch - chalcopyrite, garnet, limonite, quartz, rutile, tourmaline.
Copper Gulch - garnet, tourmaline.
Gold Reef mine - barite, cerussite, galena, gold, pyrite.
Indian Queen mine - galena.

ROCK CORRAL (E. of) - albite, orthoclase, prase, smoky quartz.

ROCKY DISTRICT (Rocky Range).
Adelia mine - magnetite, wulfenite.
Banana mine - azurite, bornite, chalcopyrite, diopside, garnet, kioinite, magnetite, malachite, stringhamite, tenorite, thaumasite.
Copper Ranch mine - azurite, garnet, magnetite, malachite, muscovite, scheelite.
Little Rocky prospect - huntite.
Maria mine - azurite, bornite, chalcopyrite, magnetite, malachite.
Old Hickory mine - apatite, bornite, chalcopyrite, diopside, garnet, magnetite, manganite, pyrite, scheelite, thaumasite.
Silver Shield Mining and Milling Company mine - manganite.

SAN FRANCISCO (FRISCO) DISTRICT (San Francisco Mountains) - apatite, augite, biotite, chlorite, chrysotile, goethite, hornblende, ilmenite, magnetite, manganite, pyrolusite, quartz, rare earths, rhodochrosite, rutile, thorium mineralization, titanite, zircon.
Beaver Carbonate mine - chalcopyrite, galena, pyrite, sphalerite.
Cupric mine - chalcopyrite, diopside, fluorite, galena, garnet, pyrite, scheelite, sphalerite, wollastonite.
Frisco Contact mine - epidote.
Golden Reef mine - gold, selenium mineralization.
Horn Silver mine - alunite, anglesite, argentite, azurite, barite, beaveringite, bindheimite, brochantite, calamine, calcite, cerargyrite, cerussite, chalcantite, chaledony, chalcocite, chalcopyrite, chrysocolla, cosalite, covellite, dufrenoyite, galena, goslarite, gypsum, jamesonite, jarosite, kaolinite, malachite, meladonite, opal, plumbojarosite, proustite, pyrrhotite, pyrite, scorodite, smithsonite, stibnite, sulfur, wollastonite, wulfenite, wurtzite, zircon.
Imperial mine - chalcopyrite, copper, cuprite, galena, hematite, magnetite, malachite.
King David mine - galena, pyrite.
Michigan group - chalcopyrite, galena, gold, pyrite.
Peacock Copper group - galena, sphalerite.
Washington mine - chalcopyrite, galena, pyrite, sphalerite.

SOUTHERN SAN FRANCISCO MOUNTAINS
Brinestone Mound - opal, sulfur.
White Mountain - autunite, carnolite.

STAR and NORTH STAR DISTRICTS (Star Range) - aurichalcite, bismuthite, cerargyrite, molybdenite, scorodite, rhodochrosite, saponite.
Atlas mine - libethenite.
Brown Thrush, Cabin, Fluorine Ledge, Lucky Boy nos. 1-2, Manassa, Monte Cristo, Quartzite, North Virginia Extension, Virginia nos. 1-5 claims - fluorite, quartz.
Cedar-Talisman, Hoosier Boy Mines - anglesite, azurite, calamine, cerussite, galena, malachite, smithsonite, troostite, willemite.
Commonwealth, Kemple, Progressive, St. Mary's mines - azurite, bismuthinite, bismuthite, calcite, cerussite, chalcopyrite, garnet, limonite, malachite, pyrite.
Copper King mine - azurite, garnet, magnetite, malachite, scheelite.
Dotson mine - azurite, cerussite, galena, malachite.
Emerson mine - aurichalcite, cerussite, hemimorphite.
Estelle mine - anglesite, cerussite.
Estelle, Mowitza, Vicksburg mines - anglesite, cerussite, galena.
Gold Crown mine - anglesite, cerussite, galachite, smithsonite.
Harrington-Hickory, Rebel. White Rock mines - anglesite, azurite, cerussite, chalcopyrite, corkite, galena, limonite, malachite, pyrite, silver, sphalerite, tetrahe-
drite, vanadinite, wulfenite.
Hub mine - anglesite, cerussite, chalcopyrite, chlorite, fluorite, galena, magnetite, muscovite, plumbojarosite, pyrite, serpentine, sphalerite.
Lady Bryan mine - chalcopyrite, epidote, fluorite, hedenbergite, magnetite, muscovite, pyrite, pyroxene, tremolite.
Little May Lilly Mine - scheelite.
Mammoth mine - cerussite, limonite.
Maud S. mine - cerussite, chalcopyrite, smithsonite.
Moscow mine - amphibole, anglesite, cerussite, chalcopyrite, fluorite, galena, greenockite, hedenbergite, jarosite, plumbojarosite, pyrite, rhodochrosite, sericite, smithsonite, sphalerite.
Red Warrior mine - anglesite, azurite, cerussite, chalcopyrite, galena, jarosite, limonite, malachite, plumbojarosite, pyrite, smithsonite, sphalerite.
Sundance mine - cerussite, hemimorphite, malachite, manganite.
Vicksburg mine - cerussite, pyrite.
Wild Bill mine - anglesite, azurite, cerussite, chalcopyrite, chrysocolla, corkite, diopside, fluorite, galena, garnet, jarosite, magnetite, malachite, pyrite, specularite, sphalerite.
Woodhouse mine - cerussite, pyrite.

STERLING DISTRICT (Red Buttes) - no minerals reported.

SULPHUR DISTRICT (Wah Wah Mountains) - sulfur.

TUSHAR MOUNTAINS
Sulfurdale area - clinoptilolite in tuff.
Three Creek Reservoir area - clinoptilolite in tuff.

WAH WAH VALLEY - sulfur.

WAH WAH MOUNTAINS
Blown Peak - alunite.
NG subareas A, B, C, and D deposits - alunite.
SX deposit - alunite.
Violet claims - hematite, quartz, red beryl, topaz.

WASHINGTON DISTRICT (Needle Range)
Blue Bell, Cougar Spar, Doughout (Dugout), J. B., Lost Sheep, Noonday, Utah mines - fluorite.
Orizaba Consolidated mine, Lucero claim - yellow andradite.

WHITE MOUNTAIN - alunite.
Grampian Hill - magnesite, tremolite.

BOX ELDER COUNTY

ASHBROOK DISTRICT (Grouse Creek Mountains) - diaspore.
Ashbrook mine - scheelite.
Bird Mine - anglesite, argentite, argyrodite, arsenopyrite, azurite, cerargyrite, cerussite, chalcopyrite, copper, covellite, cuprite, galena, gold, hematite, limonite, malachite, orpiment, pearceite, pyargyrite, pyrite, quartz, realgar, rhodochrosite, sericite, silver, sphalerite, tennantite.

BIRD ISLAND - guano.

BOX ELDER DISTRICT (Wasatch Mountains) - calcite, cerussite, galena.

CRATER ISLAND DISTRICT (Crater Island).
Copper Blossom mine - bornite, calcite, chalcopyrite, chrysocolla.

DRY LAKE MINE (E. Brigham City) - stibnite.

GREAT SALT LAKE (shores) - aragonite, bloedite, glauberite, halite, mirabilite, thenardite.

GROUSE CREEK RANGE - epidote, stolzite.
Birch, Southern Conley, Western Grouse Creeks - kyanite.
Lone Pine, Magnitude, Rocky Pass mines - scheelite.

GUNNISON ISLAND - guano.

LUCIN DISTRICT (Pilot Range).
Copper Mountain mine - alunite, anglesite, azurite, barite, cerussite, chrysocolla, copper, cuprite, galena, goethite, gold, halloysite, kaolinite, limonite, malachite, melaconite.
Cunepah (Montello) tunnel - cerussite, galena, limonite, smithsonite.
Empire mine - bismuthite, variscite, wulfenite.
Jeff-Doran mine - azurite, limonite, malachite.
Julson mine - cerussite.
Parkdale mine - chrysocolla.
Tecoma Hill mines - alunite, anglesite, cerussite, chalcopyrite, galena, goethite, gold, halloysite, hemimorphite, hematite, kaolinite, limonite, plumbojarosite, pyrite, sericite, silver, smithsonite, sphalerite, wulfenite.
Tri-State Minerals claim - barite.

NEWFOUNDLAND DISTRICT (Newfoundland Mountains) - anglesite, bismuthinite, cerussite, galena.
Minerals and Mineral Localities of Utah, Kenneth C. Bullock

Copper Ridge - azurite, bornite, chalcopyrite, chrysocolla, limonite, malachite, pyrite.
Desert Peak, Pack Rat Canyon - scheelite.

NORTH SHORE OF GREAT SALT LAKE - asphalt, pyrite in shale and slate.

PARK VALLEY DISTRICT (Raft River Mountains).
Century, Susannah mines - arsenopyrite, chalcopyrite, galena, gold, monazite, pyrite, sphalerite.

PROMONTORY DISTRICT (Promontory Mountains).
Big Pine mining properties - cerussite.
Lakeview, Lead Hill, North Side, Volunteer mines - bornite, calamine, cerussite, chalcopyrite, gold, gypsum, limonite, malachite, pyrite, smithsonite.
Promontory Point - obsidian, variscite.
Sunshine mining properties - cerussite.

ROSEBUD DISTRICT (Grouse Creek Mountains) - barite, cerussite, chlorite, epidote, garnet, muscovite, quartz.
A & W, Magnitude mines - galena, scheelite, vanadinite, wulfenite.
Mogul mine - galena, gold.
Red Buttes - chalcopyrite, gold, pyrite.

ROZEL POINT - asphalt.

SALINE STATION (near) - smithsonite.

SIERRA MADRE DISTRICT (Logan Canyon) - chalcotrichite, galena.

PARADISE DISTRICT (East Fork Little Bear River) - anglesite, azurite, cerussite, galena, malachite.

SMITHFIELD AREA - cerussite, kaolinite, smithsonite.

ROGUE CREEK (Browns Park).
Yellow Canary uranium deposit - azurite, bornite, brochantite, carnotite, chalcocite, chalcopyrite, gold, hematite, hydrozincite, malachite, tetraedrite, volborthite.

CACHE COUNTY

HYRUM AREA (Blacksmith Fork).
Lucky Star claim - galena, malachite; silver.

Moon claim - gold, hematite, smithsonite.

Tip Top claim - cerussite, galena, silver, smithsonite.

LA PLATA AREA (Davenport Creek).
La Plata, Sunrise claims - galena.
Sundown claim - malachite.
Yellow Jacket claim - cerussite, silver.

LOGAN AREA (Logan Canyon) - chalcotrichite, galena.

PARADISE DISTRICT (East Fork Little Bear River) - anglesite, azurite, cerussite, galena, malachite.

RICHMOND DISTRICT (Bear River Range) - galena, malachite.

SMITHFIELD AREA - cerussite, kaolinite, smithsonite.

CARBON COUNTY

COAL (COLD) CREEK (20 mi. N. Price) - carnotite.

FARNHAM DOME - carbon dioxide.

GORDON CREEK - carbon dioxide.

PRICE (S.W.) - calcite.

SUNNYSIDE (5 mi. N.) - asphalt.

TIDEWELL and RIDEOUT DISTRICT (West Tavaputs Plateau).
Winter Quarters mine - copalite.

WHITMORE CANYON - ozocerite.

DAGGETT COUNTY

BIRCH CREEK DEPOSIT - limonite.

DAGGETT CHIEF PROPERTY - pyrolusite.

RED CREEK (Browns Park).
Yellow Canary uranium deposit - azurite, bornite, brochantite, carnotite, chalcocite, chalcopyrite, gold, hematite, hydrozincite, malachite, tetraedrite, volborthite.
RED CREEK COMPLEX (Uinta Mountains) - almandite, anthophyllite, apatite, beryl, hematite, hornblende, hydrite, muscovite, staurolite.

SPRING CREEK DEPOSIT - limonite, pyrolusite.

UINTA MOUNTAINS (N.E. flank) - glauconite in Cambrian Ladore Fm. collophane, carbonate apatite, fluorapatite, francolite, phosphorite in Permian Meade Peak phosphate shale.

DAVIS COUNTY

ANTELOPE ISLAND (Great Salt Lake) - almandite, azurite, biotite, chalcopyrite, chloride, chrysocolla, epidote, grossularite, hornblende, hematite, limonite, magnetite, malachite, micacline, oligoclase, quartz, sulfur, vermiculite, zoisite.

BEAR CANYON - tremolite.

FARMINGTON DISTRICT (Wasatch Mountains). Morning Star group - azurite, chalcopyrite, cuprite, gold, malachite, pyrite. Parrish Canyon - anglesite, azurite, bornite, chalcocite, chalcopyrite, gold, limonite, malachite, pyrite, specularite.

GREAT SALT LAKE (shores) - aragonite, bloedite, glauberite, halite, mirabilite, thenardite.

LUCKY BOY AND UTAH-PIOCHE MINES - scheelite.

WANDERING JEW MINE - azurite, galena, malachite.

DUCHESNE COUNTY

ANTELOPE CANYON - wurtzilite.

AVINTAGUIN CANYON - wurtzilite.

CASTLE PEAK DISTRICT (Uinta Basin) - gilsonite.

DUCHESNE (S.W.) - albertite.

DUCHESNE IRON PROSPECT - hematite, red ocher.

GREEN RIVER FORMATION - acmite, analcite, anhydrite, bassanite, burbankite, collophane, crocidolite, dawsonite, etalite, fluorapatite, hectorite, illite, leucosperite, loughlinite, magnesioarfvedsonite, magnesioiribeclite, nahcolite, norstrandite, northupite, pyrite, reedmargnerite, riebeckite, searlesite, shortite, smectite, thermonatrite, trona.

INDIAN CANYON - sepiolite, wurtzilite.

LAKE FORK - anhydrite, gypsum.

MOON LAKE IRON DEPOSIT - hematite, red ocher.

MYTON (S.) - gilsonite.

RAT HOLE CANYON - wurtzilite.

RED CREEK - wurtzilite.

RED LEDGE and HILLTOP IRON CLAIMS - hematite, red ocher.

ROCK CREEK - gypsum, malachite.

TABBY CREEK - tabbyite.

UINTA MOUNTAINS (S. flank) - carbonate apatite, collophane, fluorapatite, francolite, phosphorite in the Permian Meade Peak phosphate shale.

EMERY COUNTY

BARIUM INCORPORATED MINE - barite.

BLACK DRAGON CANYON - sulfur.

BOW KNOT AREA. Sevastopol, Riggs claims - schroeckingerite.

CASTLE GATE (E.) - agate, azurite, chalcedony, epsomite, jasper, malachite, silicified bone and wood.

CASTLE VALLEY - agate, azurite, chalcedony, chert, epsomite, jasper, malachite, silicified bone and wood.

CEDAR MOUNTAIN DISTRICT (Cedar Mountain) - agate, anhydrite, carnotite, chalcedony, jasper, gypsum, pyrolusite, psilomelane, silicified bone and wood, sulfur, tyuyamunite, uraninitite, wad.

EMERY (near) - brookite, cassiterite, dumortierite, ilmenite, monazite, zircon in Ferron Sandstone Member of Mancos Shale.

EMERY (LOST SPRINGS) DISTRICT (Red Plateau) - galena, gold, malachite, silver.
FULLERS BOTTOM - anhydrite, gypsum.

GREEN RIVER DISTRICT (10-12 mi. S.W. of town of Green River).

Crbapple claim - Schroedingarite, uraninite.

Denise no. 1 mine - bassetite, coffinite.

Mineral Ten claim - metatorbemite, phosphuranylite, torbernite.

Sodaroll claim - zippeite.

Ventura claims - torbernite, uraninite.

Yellow Queen claims - carnotite, torbernite, uraninite.

GREEN RIVER.

18 mi. W. of town of Green River - carnotite, tyuyamunite.

30 mi. S.W. - agate, chalcedony, fibroferrite, jasper, silicified bone and wood.

50 mi. S. - carnotite, celestite.

HORN SILVER GULCH - anhydrite, gypsum.

LAST CHANCE DESERT - agate, chalcedony, jasper.

LOST SPRINGS DISTRICT - (See EMERY DISTRICT).

MEXICAN BEND - sulfur.

MUDDY RIVER - monazite in placers.

Snow deposit - manganite, psilomelane, pyrolusite.

PHILLIPS HUNTINGTON NO. 1 WELL - brookite, cassiterite, dumortierite, as detrital grains in the Ferron Sandstone.

ROCHESTER (near) - pyrolusite.

SAN RAFAEL DISTRICT (San Rafael Swell) - agatized wood, amethyst, chalcedony, galena, gypsum, jasper.

Blue Bird prospect - carnotite, chalcocite.

Camp Bird no. 7 mine - arsenic, carnotite, orpiment, realgar.

Camp Bird no. 12 mine - carnotite.

Camp Bird no. 13 mine - carnotite, uraninite.

Calf Mesa:

Dalton group - autunite.

Dexter group - alunogen, butlerite, chalcanthite, chalcocite, chalcoprite, copiapite, coquimbsite, covellite, fibroferrite, diadochite, goldichite, halotrichite, melanterite, metazeneurite, parabutlerite, pitchblende, pyrite, roemerite, sulfur, tennantite, tetrahedrite, voltaite, zeunerite, zippeite.

Calyx mine - Carnotite, cobaltomeite, coffinite, corvusite, ferroselite, galena, montroseite, pascoite, pitchblende, pyrite, sphaerite, thalcocite.

Copper Globe deposit - anglesite, azurite, cerussite, galena, malachite, torbernite.

Delta mine - andersonite, autunite, azurite, bayleyite, becquerelite, beta-uranophane, boltwoodite, bravoite, brochantite, carnotite, covellite, fourmarierite, galena, gummite, gypsum, hematite, illite, johannite, kaolinite, malachite, meta-autunite, metatorbernite, metatyuyamunite, metazeunerite, phosphuranylite, pyrite, rutherfordine, schoepite, shrevekingarite, torbernite, tyuyamunite, uraninite, uranophane, vandendriesscheite, volborthite, zeunerite, zippeite.

Dirty Devil mines - coffinite, galena, marcasite, metatorbernite, sphaerite, torbernite.

Flat Top Mesa - carnotite, chrome mica-clay, gypsum, hewettite, metatorbernite, rauvite, torbernite, uvanite.

Green Vein Mesa:

Consolidated mine - becquerelite, johannite, metazeunerite, schoepite, zippeite.

Green Vein no. 5 mine - metazeunerite.

Original Green Vein mine - metazeunerite.

Little Susan mine - marcasite, pyrite, uraninite.

Lone Tree group - autunite, zippeite.

Lucky Strike mine - becquerelite, chalcopyrite, fourmarierite, galena, marcasite, molybdenite, niccolite, pyrite, ramburgerite, sphaerite, uraninite, zippeite.

Lucky Strike no. 2 mine - becquerelite, beiberite, cobaltocalcite, fourmarierite, galena, pitchblende, pyrite.

Major mine - coffinite, uraninite.

Maybe mine - bornite, pyrite, pitchblende.

Marshbank Canyon - uraninite.

Migliaccio mine - carnopite, rauvite, uraninite.

North Mesa nos. 1, 2, and 5 mines - carnopite, covusite.

Pay Day mine - boltwoodite, marcasite, metazeunerite, uraninite.

Table Mountain - carnotite.

Temple Mountain - ankerite, basaluminite, chrome mica-clay, carnopite, coffinite, dolomite, ferdamndite, ferroselite, galena, hewettite, hummerite, illite, meta-aluminite, metatorbernite, metatyuyamunite, monroseite, pascoite, pitchblende, pyrite, rauvite, roscoelite, tennantite, tetrahedrite, thalcoite, torbernite, tyuyamunite, uraninite, uvanite, zippeite.

Fueneolno.2 mine abernathyite, arsenic, bassetite, jarosite, meta-aluminite, metazeunerite, orpiment, pitticite, pyrite, realgar, sphaerite, scorodite.
North Temple Mountain, Eagle's Nest prospect - chrome mica-clay.
Rex no. 2 mine - corvusite, hewettite, montroseite, paramontrose, pitchblende, uraninite.
South Temple Mountain - chrome mica-clay.
Temple Mountain mine - basaluminite, coffinite, corvusite, ferroselite, galena, illite, meta-aluminite, metatyuyauminitite, montroseite, pascoite, pyrite, rauvite, teunaninite, terahedrite, uvanite.
Wild Horse Canyon - autunite, meta-autunite, phosphuranylite.
Wild Horse claims, Dripping Springs - autunite, phosphuranylite.
Temple Rock, and South Temple Wash - autunite, carnotite, corvusite, hewettite, metahewettite, metatorbemite, rauvite, tyuyamunite, uvanite.
Vagabond mine - carnotite, metahewettite, metazeunerrite.
Vanura claims - coffinite, uraninite.
West Little Horse Mesa - carnotite.
Wild Horse Canyon - carnotite.

SAN RAFAEL RIVER (2 mi S. of bridge) - agate, anhydrite, carnotite, chalcedony, gypsum, jasper, selenite, sulfur.
Tidwell Ranch - alabaster, carnotite.

SAUCE BASIN - pyrolusite.

SOUTHERN PART OF COUNTY - cryolite, gold.

WOODSIDE (5 mi. S.) - agate, chalcedony, jasper, silicified bone and wood.
WOODSIDE DOME - helium.

GARFIELD COUNTY

ANTIMONY DISTRICT (See COYOTE CREEK DISTRICT).

BOULDER MOUNTAIN.
Pleasant Creek - pyrolusite.

CANNONVILLE - bentonite, wheelerite.

CIRCLE CLIFFS - silicified wood.
Acme mine - autunite, azurite, gypsum, malachite, pyrite, torbernite.
Black Widow mine - autunite, azurite, carnotite, gypsum, torbernite, uraninite, uranophane.
Blue Goose mine - azurite, autunite, gypsum, malachite, torbernite.
Dream Prospect - carnotite.
Horse Canyon prospect - zeunerite.
Horse Head mine - autunite, carnotite, torbernite, uraninite, uranophane.
Lone B mine - carnotite, pyrite.
Rocky Mountain mine - autunite, chalcopyrite, arsenopyrite, chrysocolla, gypsum, pyrite, torbernite.
Steam Boat mine - azurite, autunite, gypsum, torbernite.
Stud Horse mine - autunite, chalcopyrite, pyrite, uraninite, zeunerite.

COLORADO RIVER DISTRICT (Colorado River) - placer gold, magnetite.

COYOTE - ptitolite, amygadaloidal fillings in basalt.

COYOTE CREEK (ANTIMONY) DISTRICT (Escalante Mountains).
Hampton mine - alunogen, epsomite, gypsum, orpiment, realgar, senarmontite, stibnite, stibiconite, valentinite.
Dirty Devil River south to Lake Canyon - placer gold.

ESCALANTE (near) - agate, ilmenite, monazite, silicified bone and wood, zircon.

HENRIEVILLE - bentonite.

HENRY MOUNTAINS - bornite, betauranotile, jet, johannite, uranophane, vanoxite, zippeite.
Bromide, Oro mines - azurite, chalcopyrite, epidote, gold, ilmenite, laimonite, magnetite, pyrite, specularite.
Crescent Creek - bentonite, carnotite, metahewettite, pascoite, placer gold, tyuyamunite.
Cuprum claim - azurite, gold, magnetite, malachite.
Starlight claims - tyuyamunite.
Southwestern Flanks - ilmenite, monazite, zircon.

HITE - gold, platinum in placers.

HUTCH PASTURE - pyrolusite, wad.

KAIPAROWITS PLATEAU - monazite, in Straight Cliffs Sandstone six miles south of Escalante.

LITTLE ROCKIES DISTRICT (Henry Mountains).
Del Monte group - carnotite, vanoxite.
Ekker mine, Shooter Canyon - carnotite, vanoxite.

MAMMOTH CREEK (S. Hatch) - onyx (green travertine).

NORTH WASH DISTRICT (Henry Moutains).
S.Y. Guthrie group - carnotite, vanoxite.  
V.C.A. deposits - carnotite.

OAK CREEK PROSPECT (17 mi. N.E. Boulder) - pitchblende, torbernite.

PANGUITCH (N.W.) - pyrolusite.

SPOTTED DOG CLAIM - torbernite.

TABLE CLIFF PLATEAU.  
Fullmer prospect - pyrolusite.

TRACHYTE DISTRICT (Henry Mountains).  
Blitz nos. 1-7, June Bell nos. 1-4, Minnie Pearl nos. 1-2, Straight Creek, Trachyte nos. 1-2, V.C.A. claims - carnotite, vanoxite.  
Trachyte Creek - carnotite, tyuyamunite.

TROPIC - bentonite.

TUSCHAR RANGE.  
Hawkins claims - pyrolusite.

WATER POCKET CANYON - anhydrite, gypsum.

GRAND COUNTY

AGATE SWITCH - agate, amethyst, chalcedony, red jasper casts of fossils, satin spar, travertine.

BALD MESA - placer gold, pyrolusite.

REAEVER MESA.  
Corvitie nos. 1-3 mines - carnotite, coffinite, rauvite.

BLUE SPAR PROPERTY (near Colorado-Utah border) - fluorite.

CANE CREEK - anhydrite, carnallite, gypsum, halite, polyhalite, sylvite.

CISCO (near) - agate, agatized clams, chalcedony, calcite (onyx marble), silicified bone and wood, opalized wood.

7 mi. S. - agate.  
Texas Gulf Potash mine - anhydrite, bractschite, carnallite, gypsum, halite, polyhalite, sylvite.  
Trader Smith's claims - schroekingerite.

COLORADO RIVER AREA - chromite, gold in placers.  
Dolores River south to Amasa Back - placer gold.

COURTHOUSE WASH - barite, calcite, limonite, pyrolusite.

CRESCENT JUNCTION - carnotite, sylvite.

FISHER VALLEY - anhydrite, gypsum.

GREEN RIVER - chromite in placers.

GREEN RIVER CROSSING (D. and R.G. Railroad) - aluninite.

GYPSUM HILLS - anhydrite, gypsum.

HARLEY DOME - carbon dioxide, helium.

HOOSIER MINE (near Brendel) - azurite, bornite, malachite, pyrite.

LA SAL DISTRICT (E. slopes of North Mountain, La Sal Mountains).

Bornite mine - azurite, bornite, malachite, pyrite.  
Jack claim - carnotite, corvusite, hewetite, ilsemannite.  
McCoy mine - azurite, bornite, chalcopyrite, malachite.

LA SAL MOUNTAINS (North Mountain) - actionolite, aegirite, augite, biotite, hedenbergite, oligoclase.

LITTLE GRAND DISTRICT (S. E. Green River).  
Black Bird claim - pyrolusite.  
Colorado Fuel and Iron Company mine - barite, calcite, pyrolusite.  
Desert Rock (Mongol) claim - pyrolusite.  
Dry Lake Wash - pyrolusite.  
Duma Point - pyrolusite.  
Needles - barite, calcite, manganite, pyrolusite, rhodochrosite.  
Salt Wash group - celestite, chert, manganite, pyrolusite.  
Tennille Wash - barite, calcite, psilomelane, pyrolusite.  
White Wash deposits - pyrolusite.

LITTLE VALLEY - limonite, pyrolusite.

MCCARTHY WELL - anhydrite.

MILL CREEK (N. Moab) - carnotite.

MINERS BASIN DISTRICT (W. slopes of North Mountain, La Sal Mountains).  
Dewey mine - actinolite, calcite, chalcedony, chrysocolla, chalcopyrite, fluorite, hedenbergite, hematite, malachite, limonite, quartz.
Dillon mine - gold, pyrite.
High Ore mine - azurite, calcite, chalcopyrite, chrysocolla, chaledony, fluorite, goethite, hematite, limonite, malachite, quartz.
McCormack mine - calcite, malachite, siderite.
M.I.F. mine - actinolite, gold, hedenbergite, pyrite.
Moab no. 1 mine - azurite, chalcopyrite, malachite, pyrite.
Placer Creek - gold.
Skyhawk mine - chalcopyrite, chrysocolla, limonite, pyrite.
West Slope mine - carnottite.
MOAB (S mi. N.) - agate, chalcedony, silicified bone and wood.
MOAB VALLEY - anhydrite, calciovolborthite, carnottite, gypsum.
MORRISON FORMATION - volkonskoite.
MULSHOES WASH - pyrolusite.
ONION CREEK (La Sal Mountains) - anhydrite, chevkinite in volcanic ash, gypsum.
PACK CREEK (La Sal Mountains) - autunite, carnottite, cuprodesclolizite, metahewettite, tyuyamunite.
PARADOX BASIN - anhydrite, carnallite, gypsum, halite, polyhalite, sylvite.
POISON SPRING CANYON - meta-autunite.
POLAR MESA DISTRICT (Polar Mesa) - fervanite, gypsum, hewettite.
Elva M. Imp. Polar nos. 2-3, Rim Rock no. 2 claims - carnottite.
PR SPRINGS - asphalt.
RICHARDSON DISTRICT (Waring Creek) - azurite, calciovolborthite, carnottite, galena, saponite, tyuyamunite, volborthite.
RYAN CREEK SCHEELITE PROSPECT - barite, fluorite, galena, scheelite, sphalerite.
SALT VALLEY AREA - anhydrite, azurite, carnallite, gold, gypsum, halite, limonite, malachite, polyhalite, psilomelane, pyrolusite, sylvite.
SEGER STATION - carnottite.

SEVEN MILE ANTICLINE - anhydrite, carnallite, gypsum, halite, polyhalite, sylvite.

SEVEN MILE CANYON.
Shinarump nos. 1-3 claims - becquerelite, boltwoodite, bornite, carnottite, chalcocite, chalcopyrite, lithiophorite, pitchblende, pyrite, schroeckingerite, uranite, zirpeite.

SQUAW PEAK - pyrolusite.

THOMPSONS AREA - agate, anhydrite, dinosaur bone, carnottite, gypsum, jasper, metahewettite, metarossite, rossite, roscovellite, selenite, tyuyamunite, vanoxite.

THOMPSONS DISTRICT (S.E. Thompsons).
Black Ape mine - liebigite, pascoite.
Cactus Rat mines - barnesite, carnottite, hewettite, metahewettite, phosphuranylite, rauvite, rossite, roscovellite, steigerite, tyuyamunite, vanoxite.
Cobalt no. 2 mine - phosphuranylite.
Flat Top no. 1 claim - carnottite.
Juniper mine - corvusite, montroseite, melanovanadite, paramontroseite, uraninite.
McCoy group - schroeckingerite.
Parco no. 23 mine - andersonite, corvusite, grantsite, metatyuyamunite, metarossite, montroseite, rossite, roscovellite, schroeckingerite, selenium, tyuyamunite, uraninite, uranite, vanoxite, zirpeite.
Red Vanadium group - carnottite.
Skinny no. 1 mine - andersonite.
Thom claim - autunite, meta-autunite.

WHEELER DESERT DISTRICT (See WILSON MESA DISTRICT).

WHITE HOUSE - pyrolusite.

WILSON MESA (WHEELER DESERT) DISTRICT (Wilson Mesa) - bentonite, gold, pyrolusite, sherwoodite.

YELLOW CAT DISTRICT (W. part of Thompsons District).
Eli Malichs Lucky Day claim - pitchblende.
L. A. Sutherland Sock claim - pitchblende.
Uvanco (Yellow Jacket) mine - carnottite.
Yellow Cat group - metahewettite, schroeckingerite, tyuyamunite.

IRON COUNTY

ANTELOPE RANGE
Black Jack (Gregory), Lucky Joe, Taylor claims - pyrol-
usite.

Newcastle area - chalcedony geodes.

CEDAR BREAKS - agate.

CEDAR CANYON - anhydrite, carnitite, gypsum, selenite.

CEDAR MOUNTAIN.
Black Hawk, Joe Louis claims - pyrolusite.

CIMA (MARIETTA, STRATTON) MINE - cinnabar, opal, sulfur.

ESCALANTE DISTRICT (Mt. Escalante).
Clove prospect - pyrolusite.

Esclante mine - adularia, annabergite, barite, cerussite, chlorargyrite, desclozite, fluorite, galena, hematite, hemimorphite, limonite, malachite, mimetite, montmorillonite, mottmarite, pyrolusite, pyromorphite, willemite, wulfenite.

GOLD SPRINGS DISTRICT (Hamlin Valley).
Aetna, Independence, Jennie, Jumbo, Little Buck, Snowflake mines - adularia, argentite, gold, limonite, pyrite.

Homestake mine - adularia, cerargyrite, fluorite, garnet, gold, mercury, quartz, selenium and tellurium mineralization.

IRON SPRINGS DISTRICT (Iron mountain, Granite Mountain, Three Peaks).
Granite Mountain (Ore bodies: Armstrong, Constitution, Desert Mound, Eclipse, Georgia, Iron Springs Arch, King, Little Allie, Little Jim, Little Mormon, Lindsay Hill, Lindsay South, Milner Pit, Pinche Pit. Section 2, State Section 2, Section 3, Section 4, Section 9, Short Line, Short Line Extension. Thompson, Twitchell Vermillion Pit, Walker) - actinolite, albite, amethyst, azurite, apatite, barite, chalcedony, cinnabar, diopside, galena, hematite, lodestone, magnetite, limonite, malachite, mimetite, pyrite, siderite.

Iron Mountain (Ore bodies: A and B, Black Hawk, Black Magnetic, Blowout Hill, Burke no. 2, Burke no. 3, Cabinet, Chesapeake, Comstock, Crystal, Cyclone, Deer, Duluth, Duncan, Excelsior, Homestake, Last Chance, Lime Cap, McCullill, Milner Hill, Mountain Lion, Pinto, Pot Metals, Queen of the West, Rex, Sparta, The Last Chance, Tip Top, Wall Street, Yellow Jacket) - actinolite, albite, amethyst, azurite, apatite, barite, chalcedony, cinnabar, diopside, galena, hematite, lodestone, magnetite, limonite, malachite, mimetite, pyrite, siderite.

Blowout Hill - metastrengite, rockbridgeite.

Three Peaks (Ore bodies: April Fool, Ashton, Blackbird, Great Western, Irene, Jeanette, Jones, Marshall, McGarry, State Section 16, War Eagle, Zeiba) - apatite, hematite, lodestone, magnetite.

KANARRAVILLE - anhydrite, autunite, gypsum.

LUND - sulfur, N. end of Escalante Valley.

MODENA - alunite, 1 mile northwest, pyrolusite, rhodochrosite.

NEEDLES RANGE
PV deposit - alunite.

PARAGONAH - analcite, in andesite flows.

Iron Peak - andesine, augite, biotite, chlorite, damourite, magnetite.

PAROWAN (near) - niter.

PINTO IRON (SILVER BELT) DISTRICT (Pinto) - hematite, magnetite.

SAND SPRINGS - gold.

SILVER BELT DISTRICT (See PINTO IRON DISTRICT).

STATELINE DISTRICT (Hamlin Valley) - argentite, bog ore, cerargyrite, ferrimolybdite, gold, mercury, pyrite, selenium mineralization, sylvanite.

Creole, Gold Dome, Johnny, Ofer, Phelps, Utah Spur mines - adularia, cerargyrite, gold, hematite, jarosite, limonite, pyrolusite.

WAH WAH MOUNTAINS
SX deposit alunite.

JUAB COUNTY

ABRAHAM HOT SPRINGS - psilomelane.
DEEP CREEK MOUNTAINS
Apex and Mary mines - beryl, fluorite, scheelite.
Gold Bond mine - azurite, gold, malachite, pyrolusite.
Heavenly Hills prospect - silver.
Hornet, MacMillan, Eastern Trout Creek mines - scheelite.
Johnson Canyon prospects - azurite, galena, malachite, pyrolusite.
Queen of Sheba and Jumbo mines - beryl, gold.
Red Hill mine - gold.
Singleton Canyon mine - azurite, malachite, tenorite, pyrolusite.
Trout Creek mine - beryl, fluorite, psilomelane, scheelite, sphalerite.
Water Canyon mine - azurite, malachite.

DESERET (DEsert MOUNTAIN) DISTRICT (Desert Mountain). - antlerite, bornite, brochantite, fluorite, hematite, limonite, magnetite, pyrite, tetrahedrite.
Miller mine - cerussite, galena, quartz with liquid inclusions.
Rockwell shaft - barite, chalcopyrite, chrysocolla, malachite.

DESERT MOUNTAIN DISTRICT (See DESERET DISTRICT).

DETOUR (DURT, JOY) DISTRICT (Drum Mountains) (See also MILLARD COUNTY) - agate, jarosite, jasper.
Black Boy group (Staats and Pratt mines) - psilomelane, pyrolusite, rhodochrosite.
Charm, Copperhead, E.P.H., Ibox mines - azurite, bismuthite, cerargyrite, chalcedony, chalcopyrite, cuprite, galena, gold, jasper, hematite, malachite, pyrite, pyrolusite.
Ibox mine - gold in jasperoid.
Iron Blossom mine - goethite, limonite, psilomelane, pyrolusite, wad.
Martha mine - gold in jasperoid.

DRUM DISTRICT (See DETROIT DISTRICT).

DUGWAY RANGE - beryl, bixbyite, chalcedony, fluorite, garnet, topaz.

EAST TINTIC DISTRICT (See under UTAH COUNTY).

EAST TINTIC MOUNTAINS - phosphorite in basal Deseret Limestone.

FISH SPRINGS DISTRICT (Fish Springs Mountains).
Carnation, Emma, Galena, Utah mines - anglesite, cerargyrite, cerussite, chalcopyrite, covellite, fluorite, galena, limonite, magnesite, plumbojarosite, pyrite, sphalerite.
Garrick mine - barite.

GOSHUTE INDIAN RESERVATION - beryl, muscovite, orthoclase, quartz.

HONEYCOMB HILLS - autunite, bertrandite, fluorite, meta-uranocircite, montmorillonite, sklodowskite, soddyite, spodumene, uraninite, uranophane, uranospinite.

IBAPAH MOUNTAINS.
Fifteenmile Canyon - beryl (gem quality aquamarine).

INDIAN CREEK - autunite, fluorite.

JERICHO - agate, chalcedony, jasper, labradorite.

JOHNSON PEAK DISTRICT (See TROUT CREEK DISTRICT)

JOY DISTRICT (See DETROIT DISTRICT).

JUAB DISTRICT (Wasatch Mountains) - cerussite, galena.

KEG (MCDOWELL) MOUNTAINS - agate, labradorite, obsidian.

MONA DISTRICT (Long Ridge) - anhydrite, cerussite, galena, gypsum.

MT. NEBO (TIMMONS) DISTRICT (Wasatch Mountains).
Ajax no. 2 prospect - galena, sphalerite.
Big Nebo mine - argentite, cerussite, galena.
Black Ledge claims - chalcedony, pyrolusite.
Blackett Tunnel - argentite, galena.
Eva (Privateer) mine - argentite, barite, calcite, calamine, cerussite, cuprite, dolomite, galena, smithsonite, sphalerite.
Freddie Lode - argentite, barite, calamine, cerussite, galena, smithsonite, sphalerite.
Highland mine - calcite, galena, sphalerite.
Santaquin Chief mine - cerussite, galena, sphalerite.
Santaquin King mine - cerussite, galena.
Syndicate (Bullock) Tunnel cerussite, galena.

NORTH TINTIC DISTRICT (Boulter Mountains) (See also under Tooele and Utah Counties).
Tintic Prince mine - galena, jasper, pyrite.

SAN PITCH MOUNTAINS.
Black Jack (Kendall-Duvall) claims - agate, braunite, chalcedony, quartz, psilomelane.
Chicken Creek - Levan, Nephi, Salt Creek - anhydrite, gypsum, halite.

One property - calcite, opal, psilomelane, pyrolusite.

**SPRING CREEK DISTRICT** (W. side Deep Creek Mountains).

Queen of Sheba mine - albite, azurite, beryl, biotite, galena, garnet, limonite, muscovite, orthoclase, pyromorphite, quartz, tourmaline.

**THOMAS RANGE** - agate, bertrandite, beryl, chalcedony, clinoptilolite, fluorite, garnet, opal, pseudobrookite, quartz, sanidine, spessartite, topaz, uranophane, weiskite.

**SPOR MOUNTAIN** - bertrandite, clinoptilolite, fluorite, hectorite, morganite.

Bell Hill mine - carnotite, chalcedony, chalcopyrite, fluorite, hematite, magnetite, montmorillonite, pyrite, quartz.

Blowout mine - carnotite, fluorite, montmorillonite, quartz.

Blue Queen prospect - fluorite.

Claybank, Blue Chalk, Fluro, Hogshack, Northend, Rainbow, Roadside claims, Tarus - bertrandite, calcite, chalcedony, clinoptilolite, fluorite, gel-bertrandite, montmorillonite.

Dell no. 1 mine - fluorite, quartz.

Dell no. 5 mine - carnotite, fluorite, montmorillonite, quartz.

Eagle Rock prospect - calcite, carnotite, fluorite, montmorillonite.

**TIMMONS DISTRICT** (See MT. NEBO DISTRICT).

TINTIC DISTRICT (East Tintic Mountains) - arseniosiderite, arduinite, atacamite, cotunnite, pyrolusite, teonanactite, siderotil, sickerlite, spangolite, zoisite.

Ajax mine - borickite, chalcopyllite, enargite, mixite, tyrolite.

American Eagle mine - conichalcite, chenoixite, erinite.

Beck Tunnel mine - cerussite, galena, jasper.

Black Dragon mine - galena, limonite, pyrite.

Black Jack Empire mine - gold, limonite, silver, pyrolusite, wad.

Boss Tweed mine - azurite, barite, bismite, bismuth, bismutite, brochantite, calamine, cuprite, malachite, mixite.

Brooklyn mine - crandallite.

Bullion Beck mine - anglesite, aurichalcite, azurite, calamine, cerargyrite, cerussite, gold, galena, marcasite, pearceite, silver, smithsonite, sphalerite.

Carissa mine - aurichalcite, azurite, barite, bismuth, bismutite, brochantite, calcite, chrysocolla, conichalcite, copper, cuprite, enargite, garnet, lettsomite, malachite, mixite, olivenite, pitticite, scorodite, utahite.

Centennial Eureka mine - azurite, barite, cerargyrite, chalcoite, chalcopyrite, conichalcite, copper, convalite, cuprite, enargite, erinite, galena, gold, malachite, metazeunerite, silver, zeunerite.

Chief Consolidated mine - cerargyrite, cerussite, enargite, galena, huntite on 1800 level, jasper, proustite, pyrargyrite, pyrite, silver, smithsonite, sphalerite.

Colorado mine - calamine, cerussite, galena, geocronite, smithsonite, sphalerite.

Dragon mine - chrysocolla, galena, halloysite, limonite.

Eagle and Blue Bell mine - anglesite, bismite, bisnütite, bisnucite, cerargyrite, cerussite, daubreelite, enargite, galena, jarosite, jasper, smithsonite.

Emerald mine - bismuth, calcite, hematite, limonite, psilomelane, wad.

Eureka Hill mine - anglesite, barite, brochantite, calphosiderite, cerussite, enargite, galena, gold, leadhillite, minette, phosgenite, pyromorphite, sphalerite.

Gemini mine - anglesite, aurichalcite, azurite, calamine, cerargyrite, cerussite, galena, heulandite, hydrozincite, jasper, malachite, marasite, pearceite, silver, smithsonite.
Godiva mine - anglesite, cerargyrite, cerussite, galena, minium, smithsonite.

Gold Chain mine - barite, conichalcite, enargite, malachite, olivenite, pharmacosiderite, tyrolite.

Grand Central mine - barite, cerargyrite, chalcopyrite, chalcopyrite, connellite, covellite, enargite, galena, jasper, limonite, silver.

Homesake and Shoebridge mines - enargite, galena.

Hunting mine - anglesite, cerussite, galena, stephanite.

Iron mine - cerargyrite, hematite, limonite.

Iron Blossom mine - adamite, aragonite, aurichalite, azurite, barite, calcite, covellite, enargite, galena, jasper, malachite, pyrite, sphalerite.

Lower Mammoth mine - enargite, galena, pyrite, smithsonite, sphalerite, tetrahedrite.

New Bullion mine - smithsonite.

Mammoth mine - argentite, arsenobismite, barite, bindheimite, bismuthian bismuthinite, borickite, brochantite, cerargyrite, cerussite, chalcopyllite, clino- closite, enargite, erinite, famatinite, galena, gold, gypsum, lettsomite, olivenite, pharmacosiderite, pyromorphite, silver, tyrolite.

May Day mine - aurichalite, calamine, galena, gold, hydrozincite, smithsonite.

Mintonic mine - turrite.

Opohonga mine - barite, enargite, olivenite.

Packard Peak - halloysite.

Scotia mine - bindheimite, jamesonite.

Sioux mine - azurite, dolomite, enargite, galena, malachite, quartz.

Sunbeam mine - anglesite, cerussite, limonite, malachite, pyrite.

Swansea mine - anglesite, arsenopyrite, barite, cerussite, enargite, galena, melaconite, melanterite, pyrite, silver, sphalerite, tenorite.

Uncle Sam mine - aurichalcite, smithsonite.

Victoria mine - ankerite, bismuthite, calamine, enargite, galena, gold, jasper, manganite.

White Cloud mine - pyrolusite, wad.

Yankee mine - aurichalite, smithsonite.

TROUT CREEK (JOHNSON PEAK) DISTRICT (E. side Deep Creek Mountains) - fluorite, gold, pyrrhotite, sphalerite.

Apex mine - beryl, quartz, scheelite.

Bacon mine - andalusite, scheelite.

Trout Creek mine - scheelite.

WEST TINTIC DISTRICT (West Tintic Mountains) - arsenopyrite, bismuthinite, enstatite, galena, idocrase, magnetite, molybdenite, pyrite, scheelite, sphene, talc, tremolite, wollastonite.

8N mine - anglesite, barite, cerussite, chrysocolla, fluorite, galena.

Iron King mine - andradite, clinozoisite, epidote, grossularite, magnetite, pyrite, scheelite, specularite.

Lockheed Iron property - chalcopyrite, epidote, hematite, magnetite, malachite, pyrite.

1903 mine - barite, calamine, cerussite, chalcopyrite, chrysocolla, fluorite, galena, limonite, malachite, pyrite, sphalerite.

Pyramid mine - barite, galena, limonite, malachite.

Scotia (Old Scotia) mine - anglesite, arsenopyrite, azurite, barite, bindheimite, cerussite, chalcopyrite, chrysocolla, conichalcite, galena, gold, hematite, jamesonite, limonite, linarite, malachite, olivenite, pharmacosiderite, pyrite, scorodite, sphalerite.

Tintic Western (Desert Tungsten) mine - actinolite, andradite, azurite, calcite, chalcopyrite, chlorite, chrysocolla, clinozoisite, epidote, grossularite, limonite, magnetite, malachite, pyrite, quartz, scheelite, specularite, spherinite.

War Eagle claims - anglesite, aurichalcite, barite, bindheimite, calcite, cerussite, chalcedony, chalcopyrite, chrysocolla, galena, gold, hematite, limonite, malachite, pyrite, specularite, wad.

KANE COUNTY

ALUM HILLS - aluminite.

BULLOCH CLAIMS - autunite, carnotite, torbernite, tyuyamunite.

CANNONVILLE - anhydrite, gypsum.

COLORADO RIVER DISTRICT - placer gold, magnetite.

GLENDALE - anhydrite, gypsum.

JOHNSON CREEK - anhydrite, gypsum.

KAIBAB FAULT - (W. side) - allophane, ammoniojarosite, ammonia alum.

KAPIROWITS PLATEAU (S. part) - ilmenite, monazite, zircon.

Croten Canyon - monazite in Straight Cliffs Sandstone.

Rees Canyon monazite in Straight Cliffs Sandstone.

Sunday Canyon - monazite in Straight Cliffs Sandstone.

KANAB (near) - silicified wood.

KANAB CREEK - anhydrite, gypsum.
KIMBALL VALLEY - anhydrite, gypsum.

KITCHEN CORRAL CANYON - barite, calcite, chalcedony, limonite, pyrolusite.

ORDERVILLE - agate, anhydrite, calcite geodes, gypsum, silicified wood.

PARIA (PAHREAH) 9 mi. S.) - aluminite, autunite, anhydrite, carnuitc, gypsum, uranospinite.

PARIA (PAHREAH) MINING COMPANY - azurite, cuprite, malachite.

PARIA RIVER - placer gold, in Shinarump clays, fifteen miles north of Utah-Arizona boundry.

VIRGIN RIVER - torbernite.

MILLARD COUNTY

ANTELOPE SPRINGS - limonite, pyrite, altered to limonite.

BLACK ROCK (5 mi. N.) - red and black obsidian; flowering or snowflake obsidian.

CLEAR LAKE RAILROAD STATION - straw yellow labradorite in weathered andesite.

CRICKET MOUNTAINS - dolomite, hematite in fero­ ruginous quartzite member of Prospect Mountain Quartzite.

DETROIT (DRUM, JOY) DISTRICT (LITTLE DRUM MOUNTAINS) (See also Juab County).

Almond. Blue Bell, Major Drum mines - azurite, bismuthite, cuprite, chalcedony, chalcocpyrite, malachite, pyrite, pyrolusite, rhodochrosite, wad.

Black Diamond, Guy (Black Jack), Last Chance, Martha, Sileca Plug mines - jasper, manganite, pyrolusite, wad.

Charm mine - gold in jasperoid.

Martha mine - gold in jasperoid.

DRUM DISTRICT (See DETROIT DISTRICT).

FILLMORE (near) - anhydrite, gypsite, gypsum, niter.

GORDON DISTRICT (Pavant Mountains).

Black, Philadelphia, Sulphur King mines - gypsum, sulfur.

Cove Creek - gypsum, hematite, marcasite, pyrite, sulfur.

Excelsior, Mariposa, New York, Prince Albert, Queen

Victoria mines - gypsum, hematite, sulfur.

Rain Bow mine - fluorite.

Victor Conqueror mine - marcasite, pyrite, sulfur.

HOUSE RANGE.

Anasa Valley - albite, biotite, diopside, garnet, gold, idocrase, molybdenite, pyrite, scheelite, tourmaline, tremolite, wollastonite.

Granite Canyon - placer gold.

Horseshoe, Mt. Baldy, New Klondike, Pine Peak, Pinkie Peak, South, South Pit, Sidespring mines - diopside, garnet, idocrase, scheelite.

Notch Peak (intrusive and contact) - albite, biotite, diopside, garnet, gold, idocrase, microcline, molybdenite, oligoclase, orthoclase, pyrite, scheelite, tremolite, wollastonite.

Painter Springs - garnet, idocrase, microcline, orthoclase, muscovite, pyrite, scheelite.

Rainbow mine - diopside, fluorite, garnet, idocrase, scheelite.

JOY DISTRICT (See DETROIT DISTRICT).

KANOSH (near) - anhydrite, gypsite, gypsum.

LEAMINGTON (OAK CITY) DISTRICT (Canyon Range).

Arbroath mine - anglesite, cerussite, galena.

Fool Creek Canyon - azurite, limonite, malachite.

Leamington Mining Company - anglesite, cerussite, galena.

Wood Canyon - galena, sphalerite.

Yellowstone mine - anglesite, aragonite, cerussite, galena, gold.

OAK CITY DISTRICT (See LEAMINGTON DISTRICT)

SAW BACK DISTRICT (W. of Sevier Lake) - chalcopyrite, galena, garnet, molybdenite.

SEVIER LAKE (S. end) - corundum in angular masses in alluvium.

SOUTH PAVANT RANGE

Cove Fort (N.E.) - fluorite, sulfur.

Dog Valley - chalcedony, fluorite.

TABERNACLE MOUNTAIN - guano.

TUSHAR MOUNTAINS

Cove Fort area - clinoptyilolite in tuff.

TWIN PEAK - andesine, apatite, augite, biotite, mag-
netite, martite.
*Black Diamond Iron prospect* - hematite, magnetite, martite.

**WHITE MOUNTAIN** - red and black obsidian, black obsidian.

**MORGAN COUNTY**

**ARGENTA DISTRICT** (Wasatch Mountains).
*Carbonate Hill, Carbonate Gem mines* - anglesite, barite, cerussite, galena, jarosite, limonite, pyrite, smithsonite.

**ARTHUR FORK** - biotite, monazite, molybdenite, uraninite, xenotime.

**HARDSCRABBLE (MILL CREEK) DISTRICT** (Wasatch Mountains).
*Norway group* - hematite, limonite.

**MILL CREEK DISTRICT** (See Hardscrabble District).

**MORGAN DISTRICT** (Wasatch Mountains).
*Chicago-Utah, Iron King, Morgan Consolidated, Red Eagle mines* - azurite, gold, malachite, marcasite, pyrite.
*Morgan Crescent mine* - azurite, chalcopyrite, chrysocolla, copper, cuprite, gold, malachite, tenorite.

**ROUND VALLEY.**
*Copper Mountain mine* - azurite, malachite.

**STRAWBERRY MINE** (near Gateway) - gold, silver.

**PIUTE COUNTY**

**ALUNITE RIDGE** - alunite.

**ANTELOPE RANGE** - limonite, pyrolusite, torbernite.

**CIRCEVILLE MOUNTAIN** - stellerite.

**DEER TRAIL MOUNTAIN** - alunite.

**DRY CANYON** - pyrolusite.

**GOLD MOUNTAIN (KIMBERLY) DISTRICT** (Deer Creek, Tushar Mountains) alunite, barite, garnet, gypsum.
*Annie Laurie mine* - argentite, cerargyrite, fluorite, galena, gold, limonite, pyrite, sphalerite.
*Keystone mine* - fluorite.
*Mill Creek on Signal Peak* - placer gold.
*Sevier mine* - adularia, argentite, amethyst, azurite, cerargyrite, fluorite, gold, limonite, pyrite.

**KIMBERLY DISTRICT** (See **GOLD MOUNTAIN DISTRICT**)

**MARYSVALE DISTRICT** (Marysvale Uranium Area) - adularia, alflpane, alun, alunite, albite, biotite, calcite, cobaltomine, clinoclore, chlorite, cristobalite, dickite, halite, halloysite, manganocalcite, montmorillonite, nontronite, obsidian.
*Alum King mine* - potash alun.
*Al-Kee-Mee prospect* - alunite, natroalunite.
*Big Chief, Big Star, Manning Creek, Mary's Lamb, Marysvale Peak, North Star, Pittsburg, White Hills, Winkelman mines* - alunite.
*Blackbird, Blue Miami Moon no. 1 mines* - pyrolusite.
*Buddly mine* - autunite, jordisite, lithiophorite, pitchblende.
*Bullion Monarch (Farmer John) mine* - autunite, barite, fluorite, ilsemannite, jordisite, johannite, lithiophorite, metatorbemite, schwoeckingerite, torbernite, pitchblende, uraninite, uranophane, uranopilite, zippeite.
*Copper Butte mine* - autunite, torbernite, uranophane.
*Copper Cap mine* - jordisite.
*East Slope no. 2 prospect* - alunite, autunite, hematite, metatorbemite, schwoeckingerite, uranophane.
*Freedom Lease, V.C.A. mine* - autunite, pitchblende.
*Freedom no. 1 mine* - autunite, fluorite, ilsemannite, jordisite, jordisite, lithiophorite, pitchblende, torbernite, schwoeckingerite, umohoite.
*Freedom no. 2 mine* - autunite, betaunuranite, fluellite, fluorite, geerkstutte, ilsemannite, jordisite, lithiophorite, meta-autunite, metatorbemite, phosphuranylite sabugalite, schwoeckingerite, sklodowskite, torbernite, umohoite, uraninite, uranophane, zecernite, zippeite.
*J & L. alunite mine* - alunite, hyalite, opal, phosphuranylite.
*LaVita prospect* - fluorite, goethite, hematite, metatorbemite, meta-autunite, molybdenite, pyrite, rauvite, tyuyamunite.

**Papsy's Hope prospect** - meta-autunite, uranophane.
*Prospector no. 1 mine* - autunite, fluorite, ilsemannite, jordisite, johannite, lithiophorite, pitchblende, torbernite, schwoeckingerite, uraninite, uranophane, uranoplite, zippeite.
*Prospector no. 3. mine* - autunite, lithiophorite, pitchblende, torbernite, schwoeckingerite.
*Quicksilver mine* - amethyst argentite, cinnabar, ilsemannite, metacinnabar, moridenite, onofrite, quartz, selenite, teumamnite.
*Silico Hills* - alunite, celadonite, chabazite, goethite, jordisite, opal, natroilite, thomsonite.
*White Horse deposit* - alunite, kaolinite.
*Yellow Jacket mine* - alunite, jordisite.
MOUNT BALDY DISTRICT (Cottonwood Creek, Tushar Mountains).

*Acta* (Edna) mine - alunite.
*Bradburn, Close In, Mineral Products, L and N, Sunshine mines* - alunite.
*Christmas mine* - alunite.
*Clyde mine* - chalcopryite, malachite, pyrite, sphalerite, tetrahedrite, wurtzite.
*Crystal mine* - alunite, galena.
*Deer Trail mine* - anatase, anglesite, cerussite, fluorite, galena, gold, jarosite, limonite, leuchoenbertie, malachite, manganese,calcite, octahedrite, pitchblende, plumbogibersite, pyrite, pyrolyse, quartz, specularite, sphalerite, zircon.
*Green Eyed Monster mine* - limonite, pyrite.
*Lucky Boy mine* - barite, cinnabar, onofrite, tellurium mineralization, tiemannite.
*Pluto mine* - argentite, cerargyrite, cerussite, galena, gold, tellurium mineralization, wulfenite.

MOUNT BELKNAP - pyrolusite.

OHIO DISTRICT (Bullion Canyon, Tushar Mountains).
*Bully Boy and Webster mines* - azurite, barite, cerussite, chalcopryite, fluorite, galena, gold, hydrozincite, limonite, pyrite, pyrolyse, quartz, specularite, sphalerite, zircon.
*Cascade mine* - azurite, cerussite, chalcopryite, galena, gold, malachite, pyrite, tetrahedrite, sphalerite.
*Copper Belt, Iris, Shamrock mines* - azurite, cerussite, chalcopryite, galena, malachite, pyrite, tetrahedrite.
*Dalton mine* - azurite, cerussite, gold, malachite, pyrite, rhodochrosite, sphalerite, tellurium mineralization, tetrahedrite.
*Gilbert claims* - pyrolusite.
*Great Western mine* - chalcopryite, fluorite, galena, pyrite, sphalerite, tetrahedrite.
*Lakeview claims* - calcite, jasper, pyrolyse, rhodochrosite.
*Crawford Mountains* - phosphorite, tyuyamunite.

GARDEN CITY DISTRICT (See SWAN CREEK DISTRICT).

LAKE TOWN CANYON - phosphorite.

SWAN CREEK (GARDEN CITY) DISTRICT (Bear River Range).
*Victoria prospect* - azurite, barite, cerussite, galena, tiemannite, wulfenite.

WOODRUFF CREEK - phosphorite.

SALT LAKE COUNTY

ADAMS DISTRICT (See HOT SPRINGS DISTRICT).

ALTA DISTRICT (See LITTLE COTTONWOOD DISTRICT).

ALTA STOCK - allanite, bornite, brucite, calcite, chalcopyrite, diopside, forsterite, garnet, hypersthene, ludwighite, magnetite, pyrite, tremolite in contact zone.

ALUM POINT - apjohnite, bushmanite, pickeringite.

BIG COTTONWOOD CANYON (near mouth) - large orthoclase crystals.

BIG COTTONWOOD DISTRICT (Wasatch Mountains) - actinolite, andradite, anglesite, asbestos, barite, dufreniose, orthoclase.

*Alta Tunnel and Transportation Company mine* - cerussite, galena, malachite, smithsonite.
*American Metals mine* - galena, pyrite, quartz, sphalerite.
*Big Cottonwood mine* - bornite, brucite, chalcopyrite, epheite, forsterite, galena, hydromagnesite, magnesio-ludwighite, magnetite, malachite, periclase, pyrite, susesse, xanthophyllite.
*Carbonate mine* - argentite, aurichalite, cerussite, galena, limonite, malachite, pyrolyse, smithsonite.
*Cardiff mine* - cerussite, covellite, enargite, galena, limonite, malachite, plumbogibersite, pyrite, pyrolyse, rhodochrosite, smithsonite, sphalerite, tetrahedrite.
*Columbus Rexall mine* - bornite, chalcopyrite, enargite, galena, pyrite, siderite, tetrahedrite.
*Confidence mine* - anorthite.
*Copper King mine* - cuprite, molybdenite.
*Eclipse mine* - azurite, anglesite, cerussite, galena,
goethite, malachite.

*Great Western mines* - ludwigite, (see Big Cottonwood and Mountain Lake mines).

*Howell-Baby McKee mine* - chalcopyrite, galena, pyrite, sphalerite.

*Kennewec mine* - cerussite, galena.

*Kentucky - Utah mine* - chalcopyrite, magnetite, pyrite.

*Lulu mine* - chalcopyrite, galena, siderite.

*Maxfield mine* - alaskaite, anorthite, dyscarasite, galena, pyrite, sepiolite, sphalerite, tetrahedrite, wollastonite.

*Mountain Lake mine* - bornite, brucite, chalcocite, chalcopyrite, diopside, epidote, ephesite, forsterite, garnet, hydromagnesite, magnesioludwigite, magnetite, malachite, muscovite, periclase, scheelite, sussexite, zambelyte, xanthophyllite.

*Mountain View mine* - ludwigite.

*New State mine* - gold.

*Prince of Wales and Antelope mines* - azurite, cerussite, galena, malachite, pyrite, rhodochrosite, sphalerite.

*Reed and Benson mines* - cerussite, chalcopyrite, galena, goethite, hemimorphite, sphalerite, tetrahedrite.

*Silver Mountain mine* - cerussite, galena, pyrite, smithsonite, sphalerite.

*Steamboat mine* - chalcopyrite, forsterite.

*Tar Baby mine* - galena.

*Tungsten Tunnel mine* - huebnerite, powellite, scheelite.

*Woodlawn mine* - cerussite, chalcopyrite, galena, magnetite, malachite, pyrite, pyrolusite, sphalerite, wulfenite.

**BINGHAM (WEST MOUNTAIN) DISTRICT** (Oquirrh Mountains) - actinolite, bismuth, bismutite, bournonite, calcite, garnet, linarite, magnetite, massicot, mercury, pyrolusite, pyrrhotite, sphalerite, tennantite.

*Bear Gulch* - placer gold.

*Bingham Copper (Kennecott, Utah Copper) Pit* - allophane, apophyllite, bornite, chalcanthite, chalcopyrite, chalcanthite, enargite, foshagite, gold, pyrite, kaolinite, illite, malachite, molybdenite, nontronite, okenite, palladium, platinum, pyrite, quartz, sericite, selenium mineralization, stilbite, tellurium mineralization, thaumasite, thomsonite, tobermorite, turquois, vivianite, wavellite.

*Boston Consolidated. Burning Moscow, Last Chance, Nast mines* - cerussite, chalcoctite, chalcopyrite, galena, gold, pyrite, sphalerite.

*Broad Gauge mine* - cerussite, chalcanthite, gold, hematite, pyrite.

*Brooklyn, Yosemite mines* - cerussite, chalcopyrite, galena, gold, pyrite, sphalerite.

*Butterfield mine* - azurite, cerussite, chalcopyrite, galena, gold, malachite, pyrite, rhodochrosite, sphalerite.

*Butterfield Canyon* - orpiment, realgar.

*Caledonia, Montezuma, Red Wing mines* - cerussite, galena, gold, pyrite.

*Carr Fork* - placer gold.

*Carr Fork mine* - bornite, chalcopyrite, galena, garnet, hematite, magnetite, molybdenite, pyrite, pyrhotite, sphalerite.

*Colorado mine* - chalcopyrite, galena, pyrite.

*Columbia mine* - azurite, chalcoctite, malachite, pyrite.

*Commercial mine* - azurite, chalcocite, chalcopyrite, copper, enargite, gold, malachite, pyrite, tellurium mineralization.

*Conger, Fortune mine* - chalcoctite, chalcopyrite, galena, pyrite.

*Copper Center Tunnel* - bornite, chalcopyrite, pyrite.

*Dalton, Lark group* - azurite, cerussite, chalcopyrite, galena, gold, pyrite, silver, sphalerite.

*Eagle Bird lode* - arsenopyrite, barite, galena, rhodochrosite, sphalerite.

*Eighty Nine mine* - tetrahedrite.

*Frisco mine* - chalcoctite, galena, pyrite, sphalerite.

*Galena, Old Jordan mines* - anglesite, azurite, bornite, cerussite, chalcanthite, chalcocite, chalcopyrite, cuprite, enargite, galena, gold, goslarite, limonite, malachite, opal, pisarite, pyrite, quartz, sphalerite, tenorite, tetrahedrite, silver.

*Highland Boy, Yampa mines* - azurite, bornite, calaverite, chalcanthite, chalcocite, chalcopyrite, copper, covellite, cuprite, enargite, galena, leverrierite, limonite, malachite, marasite, pyrite, racewinite, siderite, specularite, sphalerite.

*Jersey Blue mine* - cerussite, galena.

*Lucky Boy mine* - barite, luckite, melanterite, mallardite, rhodochrosite.

*Midland mine* - azurite, cerussite, galena, malachite, marcasite.

*Minnie mine* - chalcocite, pyrite.

*Northern Chief lode* - covellite.

*Parnell mine* - gold.

*Petro mine* - cerussite, galena.

*Phoenix mine* - chalcoctite, galena, pyrite.

*Queen lode* - argentite, galena.

*Silver Shield mine* - chalcopyrite, galena, freibergite, tetrahedrite.

*Tiewaukee mine* - azurite, binnite, galena, malachite,
pyargyrite, pyrite, silver, sphalerite.

**U.S. and Lark mine** - azurite, cerussite, chalcopyrite, galena, gold, malachite, montmorillonite, pyrite, quartz, silver, sphalerite, talc.

**Winnamuck, Dixon mines** - ccrargyrite, chalcocite, chalcopyrite, cubanite, dufrenoyosite, galena, gold, goslarite, pyrite, pyargyrite, rhodochrosite, sphalerite, tetrahedrite.

**York mine** - azurite, chalcocypire, galena, malachite.

**CAMP WILLIAMS**

**Evans Keith quarry** - calcite, pyrolusite.

**CLAYTON PEAK STOCK** - ankerite, bornite, brucite, calcite, chalcocypire, diopside, forsterite, garnet, ilomite, magnesium, magnetite, monticellite, periclase, phlogopite, pyrite in contact zone.

**DRY CANYON** - phosphorite.

**GREAT SALT LAKE (shores)** - aragonite, bloedite, glauberite, gypsum, halite, mirabilite, thenardite.

**HOT SPRINGS (ADAMS) DISTRICT** (Wasatch Mountains) - cerussite, galena.

**LAKE BONNEVILLE SHORELINE** - thinolite as cement of gravels.

**LITTLE COTTONWOOD (ALTA) DISTRICT** (Wasatch Mountains) - allanite, chabazite, ferrimolybdate, heulandite, mesolite, orthoclase, prehnite, periclase, sepiolite, stilbite, zoisite.

**Albion mine** - argentite, barite, bornonite, cerussite, chalcopyrite, galena, pyrite.

**Alta mine** - actinolite, biotite, diopside, forsterite, garnet, tremolite, vesuvianite.

**Alta Consolidated mine** - cerussite, chalcopyrite, limonite, magnetite, pyrite, wulfenite.

**Alta - Gladstone vein no. 5** - molybdenite, pyrite.

**Bay State mine** - stilbite.

**Cabin mine** - cerussite, galena, limonite, plumbogoss late.

**Centennial Alta mine** - beaverite, enargite, tyrolite, wulfenite.

**City Rocks mine** - wulfenite.

**Columbus Consolidated and Wasatch Drainage Tunnel mine** - galena, pyrite, sphalerite, tetrahedrite.

**Columbus-Rexal mine** - bornite, chalcopyrite, enargite, galena, pyrite, siderite, tetrahedrite.

**Lumna mine** - argentite, anglesite, azurite, cerussite, calamine, chrysocolla, cervantite, galena, limonite, malachite, massicot, pyrite, pyrolusite, siderite, smithsonite, stephanite, sphalerite, stolzite, tetrahedrite, tungstenite, wulfenite, wolframite.

**Flagstaff mine** - barite, cerussite, galena, limonite, plumbogoss late, wulfenite.

**Grizzly mine** - larnite.

**Little Emma mine** - anglesite, calamine, cerussite, cervantite, chrysocolla, galena, malachite, pyrite, pyromorphite, sphalerite, stephanite, tungstenite, wulfenite.

**Michigan-Utah (Continental Alta) mine** - anglesite, cerussite, galena, limonite, ludwigite, magnetite, pyrobolite, rhodochrosite, wulfenite.

**Native Copper mine** - chalcopyrite, copper.


**Pates-Marley mine** - epidote.

**Peruvian Consolidated mine** - galena, pyrite, tetrahedrite.

**South Hecla mine** - (includes Dwyer and Sells Tunnels) - alkinitate, busmite bismuth, bismuthinite, bornite, chalcopyrite, enargite, galena, garnet, ludwigite, magnetite, plumbogoss late, pyrite, scheelite, smithsonite, sphalerite, tetrahedrite, wollastonite.

**Superior mine** - chalcopyrite, galena, pyrite, sphalerite, tetrahedrite.

**Third Chance mine** - molybdenite.

**West Toledo mine** - cerussite.

**LITTLE COTTONWOOD STOCK** (Wasatch Mountains) - apatite, allanite, biotite, hornblende, magnetite, microcline, molybdenite, orthoclase, plagioclase, pyrite, quartz, sphene, sericite, scheelite, zircon.

**LOWER PLACER DISTRICT** (Oquirrh Mountains) - gold.

**SMELTER DISTRICT** (Oquirrh Mountains) - limonite, malachite.

**WEST MOUNTAIN DISTRICT** (See BINGHAM DISTRICT).

**SAN JUAN COUNTY**

**ABAJO MOUNTAINS** - placer gold on south flank.

**ABE DAY'S VANADIUM CLAIM** - carnotite.

**BIG INDIAN DISTRICT** (Big Indian Wash-Lisbon Valley Area).

**Big Buck mine** - becquerelite, coffinite, doloresite, montroseite, uraninite, vanadium hydromica.

**Big Indian Copper mine** - azurite, chalcocite, chalcopyrite, covellite, cuprite, malachite, pyrite.

**Cal uranium mine** - coffinite, carnotite, doloresite, montroseite, paramontroseite, uraninite, vanadium hydromica.
dromica.

Homestake mine - coffinite, doloresite, montroseite, paramontroseite, uraninite, vanadium hydromica.

La Sal mine - coffinite, doloresite, montroseite, uraninite, vanadium hydromica.

Mi Vida (Lurex) mine - bayleyite, carnotite, cerussite, chalcocite, claushalite, coffinite, doloresite, fluorite, galena, greenockite, liebigite, montroseite, paramontroseite, pascoite, pickthblende, sphalerite, tyuyamunite, uraninite, vanadium hydromica, vanoxite.

Radon mine - carnotite, celestite, coffinite, doloresite, montroseite, tyuyamunite, uraninite, vanadium hydromica, whewellite.

Rattlesnake mine - carnotite, coffinite, doloresite, montroseite, uraninite, vanadium hydromica.

BLUFF - placer gold in sands of San Juan River.

BLUE JAY MINE - boltwoodite.

BLUE MOUNTAIN DISTRICT (See MONTICELLO DISTRICT).

BROWNS HOLE AREA - carnotite.

BULL CANYON - carnotite.

"C" GROUP CLAIMS - rutherfordine.

CAN SPRINGS PASS.

Bridger Jack Flat - carnotite.

CAN WASH.

Atomic King no. 2 mine - andersonite.

CHESS RIDGE - carnotite.

CHINLE WASH - pyrope.

COLORADO RIVER - chromite, gold in placers.

San Juan River Junction to Lecs Ferry - placer gold.

COMB RIDGE (near) - pyrope in volcanic vents.

COTTONWOOD CANYON DISTRICT.


DRY VALLEY - carnotite.

EAST CANYON - carnotite, tyuyamunite.

ELK RIDGE - andersonite, bieberite, chalcanthite, chalcocite, donkeyite, tyuyamunite, uranothallite.

Avalanche no. 13 (Ransome) mine - coffinite, erythrite, uraninite.

Coral claim - bayleyite, carnotite, swartzite.

Horseshoe no. 1 mine - coffinite, uraninite.

King Edward mine - chalcopryrite, coffinite, erythrite, ilsemannite, pyrite, siderite, uraninite.

King James - Virgene mine - ilsemannite, tennantite, uraninite, zippelite.

Avalanche no. 1 and 4 mines - cuprosklodowskite, ilsemannite, jarosite, marcasite, meta-autunite, uraninite.

Notch nos. 5 and 6 mines - chalcopryrite, covellite, galena, malachite, metzeuenerite, schroeckingerite, volbrothite.

Oakie mine - azurite, chalcopyrite, coffinite, malachite, uraninite.

Payday mine - bornite, chalcopyrite, galena, uraninite.

Sandy no. 2 mine uraninite.

Sandy no. 3 mine - alliphane, alunite, chalcopyrite, metzeuenerite, uraninite, uranophane.

Western Payday mine - coffinite, uraninite.

Woodenshoe no. 3 mine - azurite, malachite, uraninite.

GOLDEN QUEEN MINE - gold.

GYPSUM CREEK - anhydrite, gypsum.

INDIAN CREFK - carnotite.

JULIA CLAIMS - boltwoodite.

LA SAL MOUNTAINS - amethyst, azurite, bornite, carnotite, chalcopyrite, chrysocolla, covellite, limonite, malachite, mangonite, molybdenite, torbernite.

Middle Mountain, Brumley Ridge - aegirite, apatite, augite, magnetite, noselite, orthoclase, sodalite, sphe.

Point Lookout Placer - gold.

LA SAL QUADRANGLE.

Angle mine - carnotite, roscoelite, tyuyamunite.

Black Hat mine - coffinite, corvusite, melanovanadate, montroseite, pitchblende, pyrite, roscoelite.

Brushy Basin no. 1 mine - carnotite, tyuyamunite.

Brushy Basin no. 3 mine - carnotite, schroeckingerite, tyuyamunite.

Confusion mine - carnotite, roscoelite, tyuyamunite.

Elray mine - carnotite, tyuyamunite.

Evening Star mine - carnotite, corvusite, hewettite, simplotite, tyuyamunite.
Fire fly-Pigmay mine - carnotite, claushalite, coffinite, corvusite, galena, montroseite, pyrite, roscoeslite, tennantite, tyuyamunite, uraninite.

Grey Dawn mine - (see PARADOX VALLEY DISTRICT).

Hesperus mine - carnotite, corvusite, roscoeslite, schrockingerite, tyuyamunite.

Jackpot mine - azurite, carnotite, malachite, tyuyamunite.

Little Dawn mine - carnotite, metatyuyamunite, roscoeslite.

Little Peter mine - carnotite, corvusite, montroseite, pascoite, roscoeslite, tyuyamunite, uraninite.

Lucky no. 1 mine - carnotite, roscoeslite, tyuyamunite.

Marjorie Ann mine - carnotite, roscoeslite, tyuyamunite.

Maud mine - carnotite, roscoselite, tyuyamunite.

Morning Star mine - carnotite, roscoeslite, tyuyamunite.

New Yellow Spot mine - carnotite, roscoeslite, tyuyamunite.

Summer mine - carnotite, metatyuyamunite, roscoeslite.

Too High mine - carnotite, metatyuyamunite, roscoeslite.

Uranium Girl mine - carnotite, roscoeslite, tyuyamunite.

Valley View mine - carnotite, corvusite, metatyuyamunite, montroseite, roscoeslite.

Vannadian Queen mine - (See PARADOX VALLEY DISTRICT).

Vista Grande mine - carnotite, roscoeslite, tyuyamunite.

Wedge mine - carnotite, metatyuyamunite, roscoeslite.

Yellow Bird mine - carnotite, corvusite, montroseite, pitchblende, roscoeslite, tyuyamunite.

Yip Yip mine - carnotite, roscoeslite, tyuyamunite.

LISBON VALLEY - tyuyamunite.

Climax nos. 1-2 claims - azurite, carnotite, cuprite, malachite.

Lisbon Coppermine - azurite, cuprite, malachite.

MOAB VALLEY - anhydrite, carnallite, gypsum, halite, polyhalite, sylvite.

MONTEZUMA CANYON - carnotite.

Bradford no. 5 mine - carnotite.

Cottonwood mine - carnotite.

Dixie no. 1 mine - carnotite, roscoeslite.

Last Chance no. 1 mine - carnotite.

Lucky Boy mine - carnotite, navajoite, tyuyamunite.

Rim Rock mine - carnotite.

Rock mine - carnotite, roscoeslite.

Shum mine - carnotite.

Strawberry mine - carnotite, roscoeslite.

Titus no. 3 mine - carnotite.

Verdure mine - carnotite, roscoeslite.

West Cliff House no. 8 mine - carnotite, pascoite, roscoeslite.

MONTICELLO (BLUE MOUNTAIN) DISTRICT (Abajo Mountains) - anhydrite, carnallite, gypsum.

Alma mine - pyrite.

Blue Bird, Danish Girl, Gold Queen mines - chalcopyrite, galena, gold, pyrite, sphalerite.

Brushy Basin, Spring Creek - metarossite.

Copper Queen mine - azurite, bornite, chalcocele, chalcopyrite, chrysocolla, covellite, malachite, pyrite.

Dream mine - chalcopyrite, galena, gold, limonite, pyrite, sphalerite.

Duckett mine - calcite, gold, limonite, pyrite.

Harts Draw, Lakes claim, Robertson Pasture, Shay Mountain, Shay Road, Sunshine mining claim properties - metatyuyamunite.

Log Cabin claim - gold.

Tuffy Copper mine - azurite, chalcocele, malachite, pyrolusite.

MONUMENT VALLEY (MONUMENTAL DISTRICT (Monument Valley).

Holiday Mesa - uraninite.

Mitten no. 1 mine - corvusite, navajoite, tyuyamunite, uraninite.

Oljeta mine - autunite, azurite, malachite, tyuyamunite, uraninite, uranophane.

Skyline mine - autunite, azurite, malachite, metatorbernite, torbernite, tyuyamunite, uraninite, uranophane.

Whirlwind mine - azurite, malachite, calciovolborthite, malachite, tyuyamunite, uranophane.

MONUMENTAL DISTRICT (See MONUMENT VALLEY DISTRICT).

MORRISON FORMATION - volkonskoite.

MOSES ROCK - chlorite, cordumed, grossularite garnet, kornnerupine, pyrope garnet, rutile, spinel in dike rock.

MULE EAR - pyrope in alluvium.

NAVAJO RESERVATION - carnotite, pyrope.

PARADOX BASIN - anhydrite, gypsum.

PARADOX VALLEY DISTRICT (Paradox Valley) - carnallite, kieserite, sylvite.

Grey Dawn mine - azurite, beta-uranophane, beta-uranotil, carnotite, chalcocele, chalcopyrite, coffinite, corvusite, covellite, eucarite, galena, gummite, hewet-
tite, malachite, melanovanadate, metahewettite, metatorbemite, metatyuyamunite, montroseite, novacekite, phosphuranylite, pitchblende, pyrite, roscoelite, sale­
ite, sphalerite, torbernite, uraninite, uranophane, uranospa­thite.

Vanadium Queen mine - carnottite, coffinite, corvusite, hewettite, melanovanadate, montroseite, nolanite, paramontroseite, pitchblende, pyrite, roscoelite, sele­
nium, simplotite, tyuyamunite, uraninite.

Pete No. 6 Claim - boltwoodite.

Pintado Canyon - pintadoite.

Red Canyon District (Red Canyon) - carnottite, chalco­cite, covellite, malachite. Frey No. 4 mine - becquerelite, cuprosklodowskite, johannite, jordisite, ilsemannite, schoepite, uraninite. Jerry group - boltwoodite. Mar­key No. 1 mine - alunite, chalcanthite, chalcopyrite, metatorbemite, metazeunerite, pyrite, torber­nite, uraninite. Posey mine - becquerelite, brochanite, cuprosklodowskite, johannite, phosphuranylite, pitchblende, schoepite, torber­nite, uraninite, uranophane, zipp­eite.

San Juan River - anhydrite, chalcopyrite, copper, gold, gypsum, malachite.

Montezuma Canyon west to Colorado River - placer gold.

Spanis­ii Valley Anticline - carnottite.


Hideout mine (Deer Flats) - azurite, hayleyite, becquerel­lite, bornite, brochantite, carnottite, chalco­cite, chalcopyrite, covellite, johannite, malachite, phosphuranylite, pitchblende, schoepite, schroeckingerite, torber­nite, uraninite, uranophane, zipp­eite. Jonne mine - azurite, chalcanthite, chalcocite, chalcopyrite, coconinoite, hematite, jarosite, malachite, meta­zeunerite, pyrite. Notch mine - uraninite. Posey mine - antlerite, azurite, becquerelite, brochantite, chalcocite, cuprosklodowskite, malachite, meta­autunite, metatorber­nite, phosphuran­ylite. White Canyon No. 1 mine - bornite, carnottite, chalcopy­rite, copper, covellite, marcasite, me­tatorber­nite, pyrite, uraninite, uranophane, vog­lite. White Fawn, Yellow Circle claims - carnottite. W.N. mine (Deer Flats) - alunite, boothite, bornite, chalcanthite, chal­cocite, chalcopyrite, covellite, metatorber­nite, metazeunerite, pyrite, torber­nite, uraninite, zip­peite.

Sanpete County

Dry Canyon (N. of) - galena, marcasite, pyrite, sphalerite, strontianite.

Ephraim (near) - limonite pseudomorphs after pyrite.

Fairview (near) - beidellite.

Gunnison (S.E.) - anhydrite, gypsum, halite.

Manti (near) - epsomite.

Mayfield (S.W.) - anhydrite, gypsum.

Mt. Pleasant (8 mi. N.W.) - jasper, pyrolusite.

R.A.J. Prospect - autunite, torber­nite.

Twelve Mile Canyon - anhydrite, gypsum, halite.

Sevier County

Aurora - bentonite, fuller's earth.

Fis­hi Lake - opal.

Glenwood (N.E.) - anhydrite, chalcedony geodes, gypsum, halite, selenite.

Henry District (Antelope Range). Geor­gia, Jumbo, Yellow Hornet properties - pyrolusite.
Minerals and Mineral Localities of Utah, Kenneth C. Bullock

Iron Peaks property - hematite, limonite, magnetite, pyrolusite, thorium mineralization.
Krotke Iron (Iron Cap) mine - hematite, limonite, pyrolusite, thorium mineralization.
LaVeta Prospect - fluorite, meta-autunite, metatorbernite, rauvite, tyuyamunite.
Neovad Claim - pyrolusite.
Trinity prospect (Monzonite Hill) apatite, albite, antigorite, andradite, calcite, chalcanthite, chalcopyrite, chalcedony, diopside, epidote, grossularite, gypsum, galena, hematite, illicite, kaolinite, microcline, muscovite, montmorillonite, magnetite, orthoclase, phlogopite, pyrolusite, penninite, prochlorite, quartz, rutile, serpentine, scapolite, specularite, tremolite, wollastonite.

MONROE CANYON - brockite, jarosite, monazite, thorite in vein.
PINE CANYON (S. of Koosharem).
Black Hawk claims - corundum, variety sapphire, hercynite.
REDMOND - bentonite, halite.
ROCK CANDY MOUNTAIN - alunite, illite, jarosite, limonite, montmorillonite, pyrite, selenite.

SALINA CREEK DISTRICT (Salina Creek).
Ball mine - azurite, chalcocite, chalcopyrite, galena, malachite, sphalerite.
Lead Hill mine - azurite, celestite, cerussite, chalcocite, galena, malachite, pyrite, sphalerite.

SEVIER CANYON - azurite, copalite, malachite.
SEVIER PLATEAU.
Black Beauty claims (Forhea Mountain) - pyrolusite, wad.

SIGURD - anhydrite, gypsum, halite, selenite.

SUMMIT COUNTY
BEAVER CANYON - psilomelane, pyrolusite.
BONANZA FLAT - grossularite.
COALVILLE (near) - manganite, psilomelane, pyrolusite, sulfur.
FRANSON CANYON - phosphorite.
MARBLE (SILVER CREEK) DISTRICT - galena, pyrite.

PARK CITY (UJINTA) DISTRICT (Wasatch Mountains) - barite, calcite, chabazite, chalcanthite, chlorite, epidote, goslarite, magnetite, massicot, mimetite, phosphorite, spinel, thaumasite.
American Flag mine - galena, tetrahedrite.
California mine - galena, jamesonite, pyrite, sphalerite.
Carson stock mine - anglesite, cerussite, galena, malachite, pyrite, sphalerite.
Creole mine - cerussite, galena.
Daly mine - anglesite, azurite, bornite, cerargyrite, cerusite, chalcocite, chalcopyrite, chrysocolla, galena, malachite, montmorillonite, pyrite, pyrolusite, rhodochrosite, rhodonite, serpentine, sphalerite, tetrahedrite.
Daly-Judge mine - alisonite, azurite, balydonite, bournonite, chrysocolla, cuprite, gold, malachite, pyrite, quartz, sericite, sphalerite, tetrahedrite.
Daly West mine - argentite, azurite, bournonite, galena, malachite, quartz, pyrite, sphalerite, tetrahedrite, zinkenite.
J.A.C. Tunnel - chalcopyrite, pyrite.
Jupiter mine - azurite, cerussite, galena, malachite, garnet, quartz, specularite.
Kears-Keith mine - chalcopyrite, galena, pyrite, quartz, sphalerite.
Little Bell mine - anglesite, cerussite, chrysocolla, cuprite, galena.
Mayflower mine - chalcocite, chalcopyrite, enargite, galena, gold, hematite, pyrite, sphalerite, tetrahedrite.
Nail Driver mine - anglesite, cerussite, galena, limonite, malachite, pyrolusite.
New York mine - azurite, cerussite, galena, gold, pyrite.
Ontario mine - anglesite, azurite, bornite, cerargyrite, cerusite, chalcocite, chalcopyrite, chrysocolla, galena, malachite, montmorillonite, pyrite, pyrolusite, rhodochrosite, rhodonite, serpentine, sphalerite, tetrahedrite.
Ontario Tunnel - magnesioferrite.
Park - Bingham Tunnel - halloysite.
Park City Consolidated mine - boulangerite, calaverite, covellite, manganodolomite, pyrrargyrite.
Quincy mine - hemimorphite.
Scottish Chief mine - anglesite, cerargyrite, cerussite, chalcopyrite, chrysocolla, galena, malachite, silver, pyromorphite.
Silver King (Coalition), Woodside mines - anglesite, azurite, bindheimite, bournonite, brochantite, cerussite, chalcopyrite, chrysocolla, fluorite, galena, geochromite, gold, limonite, linarite, malachite, metastibnite, olivenite, pyrite, pyrolusite, quartz, sericite, sphalerite, stibnite, tetrahedrite.
Silver King Consolidated mine - azurite, galena, malachite, quartz, sericite, tetrahedrite, wulfenite.

**Wabash property** - chalcopyrite, gypsum, pyrite.

**SILVER CREEK DISTRICT** (See MARBLE DISTRICT)

**UINTA DISTRICT** (See PARK CITY DISTRICT).

**TOOELE COUNTY**

**AMATRICE HILL** - chalcedony, crandallite, jasper, millisite, variscite, wardite.

**BINGHAM (WEST MOUNTAIN) DISTRICT** (Oquirrh Mountains). (See also under Salt Lake County).

**Carr Fork mine** - bornite, chalcopyrite, galena, garnet, hematite, magnetite, molybdenite, pyrite, pyrrhotite, sphalerite.

**May Flower mine** - boulangerite, galena, pyrite, sphalerite.

**BLACK CROOK DISTRICT** (See ERICKSON DISTRICT).

**BLUE BELL DISTRICT** (Sheeprock Mountains).

**Benetton Canyon mine** - galena, pyrite, quartz, sphalerite.

**Black Hawk mine** - cerussite, galena, silver.

**Bogan mine** - bismuthinite, galena, hematite, limonite, pyrolusite.

**Hidden Splendor mine** - galena.

**Little Valley mine** - pyrite.

**Boultier DISTRICT** (See NORTH TINTIC DISTRICT).

**CALEDONIA DISTRICT** (See NORTH TINTIC DISTRICT).

**CALEDONIA DISTRICT** (See NORTH TINTIC DISTRICT).

**CAMP FLOYD DISTRICT** (See MERCUR DISTRICT).

**CFDAR MOUNTAINS** - calcite (onyx marble).

**CLIFTON DISTRICT** (See GOLD HILL DISTRICT).

**COLUMBIA DISTRICT** (N.E. Sheeprock Mountains).

**Benmore, Sharp mines** - cerussite, fluorite, galena, limonite, pyrite, pyrrhotite, quartz, sphalerite, silver, wad.

**Iron Hope prospect** - quartz, specularite.

**Iron King mine** - specular hematite.

**Sultana mine** - galena, gold, limonite, pyrite, quartz, silver.

**DEEP CREEK MOUNTAINS** - agate, andalusite, cerussite, chalcedony, galena.

**Bonanza mine** - arsenopyrite, scorodite.

**Complex prospect** - azurite, malachite, scheelite.

**Congar Hill mine** - cinnabar, metacinnabar, pyrite, sphalerite, stibnite, tenorite, stibnite.

**Cyclone and Leap Year mine** - aikenite, arsenopyrite, galena, chalcopyrite, chalcantinite, sphalerite.

**Devils Pit, Oro del Rey, and Eagles Nest mines** - azurite, chalco- site, chalcopyrite, galena, gold, specularite, sphalerite, malachite, plumbojarosite.

**Dewey mine** - azurite, jarosite, malachite, pyrolusite, tetrahedrite.

**Fortuna prospect** - conichalcite, malachite, pyrolusite.

**Iron Blossom prospect** - hematite, limonite.

**Laura prospect** - azurite, chalcopyrite, malachite.

**Midas mine** - arsenopyrite, chalcopyrite, galena, pyrite, pyrrhotite, scheelite.

**Midland mine** - azurite, malachite, galena, gold, jarosite, plumbojarosite.

**Monaco mine** - azurite, chalcopyrite, chrysocolla, galena, malachite, plumbojarosite.

**Monte del Rey mine** - arsenopyrite, chalcopyrite, galena.

**North Pass prospects** - galena, jarosite, malachite, siderite, tetrahedrite.

**Overland and Gold Star prospects** - azurite, galena, malachite, sphalerite.

**Probert mine** - barite, cinnabar, conichalcite, malachite, scheelite, stibnite.

**Prosperity prospect** - azurite, malachite, tenorite.

**Silver Queen prospect** - azurite, galena, jarosite, malachite, pyrite.

**Willow Springs prospects** - galena, tetrahedrite.

**DEEP CREEK VALLEY** - natron.

**DUGWAY DISTRICT** (Dugway Range) agate, amethyst, apatite, beryl, bixbyite, chalcedony, garnet, rosasite, topaz.

**Belcher claim** - azurite, chrysocolla, malachite, melaconite, tenorite.

**Bertha claim** - cerussite, chalcantinite, chalcopyrite, chlorite, covellite, galena, gypsum, hematite, hydromica, hemimorphite, limonite, pyrite, smithsonite, sphalerite, tennantite, tetrahedrite.

**Black Dragon claim** - chrysocolla, cuprite, hematite, limonite, malachite.

**Black Maria claim** - azurite, chrysocolla, fluorite, malachite.

**Boston claim** - cerussite, siderite, wulfenite.

**Bryan claim** - anglesite, calcite, cerussite, chlorite, chrysocolla, fluorite, galena, hematite, hemimorphite,
hydrozincite, limonite, smithsonite, sphalerite.

Buckhorn mine - barite, cerargyrite, cerussite, copper, cuprite, fluorite, galena, magnetite, prosphosite, silver, sphalerite, sufenite.

Bullion Canyon (head) - aragonite, barite, calcite, cerussite, chalcanthite, chryscolla, fluorite, hematite, jarosite, limonite, malachite.

Confidence property - azurite, barite, calcite, cerussite, chryscolla, fluorite, hematite, jarosite, limonite, malachite.

Foreva claim - fluorite.

Four Metals mines - barite, cerargyrite, cerussite, chalcanthite, chlorite, copper, cuprite, fluorite, galena, gold, gypsum, hematite, hydrozincite, jarosite, limonite, pyrite, silver, smithsonite, sphalerite, wulfenite.

Francis property - barite, cerussite, galena, smithsonite, sphalerite.

Golconda property - fluorite.

Great Eastern, Nautilus, Pride of the West claims - barite, covellite, fluorite, siderite.

Juno claim - barite, smithsonite.

Kelly's Hole - azurite, barite, calcite, cerussite, chalcanthite, chalcopyrite, chrysocolla, cuprite, fluorite, galena, gold, gypsum, hematite, jarosite, limonite, malachite, melaconite, pyrite, sphalerite, tenorite.

Lauris claim - barite, cerussite, fluorite, galena, hematite, limonite.

Metal States (Cannon) mine - azurite, chalcanthite, chryscolla, gypsum, limonite, malachite, melaconite, pyrite, tenorite.

Morrell shaft - hydrozincite.

New Park claim - chalcopyrite.

Rainbow claim - fluorite.

Rattler property - fluorite, quartz.

Raymond-Bald Eagle property - azurite, cerussite, galena, hematite, hemimorphite, limonite, malachite, smithsonite.

Surplus Claim - chalcopyrite, gypsum, melaconite, pyrite, sphalerite, tenorite.

Yellow Jacket property - cerussite, limonite.

Dutch Mountain - augite, azurite, cerussite, fluorite, galena, malachite.

East Erickson District (S. W. Sheeprock Mountains).

Copper Jack mine - chalcopyrite, chrysocolla, fluorite, limonite, malachite, pyrolusite, pyrite, turquoise.

Dutch Peak (Park-Utah) mine - galena, pyrite.

Ekker Canyon prospect - biotite, quartz, wolframite.

Flying Dutchman mine - chalcopyrite, fluorite, pyrite, uranium.

Green's Ridge - chlorite, limonite, magnetite, pyrite, scheelite.

Hard-to-beat-canyon - beryl, chalcopyrite, fluorite, pyrite, topaz, samarskite, uraninite.

Indianapolis mine - galena, gold, pyrite, quartz, sphalerite, specularite.

Jessel Bezel mine - azurite, chrysocolla, malachite, turquoise.

Sheeprock Canyon - beryl, chalcopyrite, fluorite, pyrite, scheelite, samarskite, uraninite.

Silver King mine - biotite, chalcopyrite, fluorite, pyrite, pyrolusite, quartz, samarskite, specularite, uraninite.

Silver Shield (Flying Dutchman) mine - chalcopyrite, chrysocolla, fluorite, limonite, malachite, pyrite, pyrolusite, turquoise.

South Pine Canyon - biotite, huebnerite, magnetite, monazite.

Tintic-Delaware (Free Coinage) mine - galena, hematite, pyrite, specularite, sphalerite.

Erickson (Black Crook) District (Simpson Mountains).

Black Jack, Black Rock, Blain, Deer Trail (Black Cap).

Indian Roy, May Farmer mines - cerussite, fluorite, galena, pyrite, pyrolusite, sphalerite.

Good Hope mine - cerussite, fluorite, galena.

Happy Jack mine - cerussite.

Highland Lassie no. 1 mine - chalcopyrite, chrysocolla, limonite, malachite.

Huber-Rydalch mine - manganite, pyrolusite, psilomelane, wad.

Indian Chief mine - cerussite, galena.

Last Hope no. 3 mine - chalcopyrite, galena.

OK mine - cerargyrite, tetrahedrite.

Queen Mary claims - pyrolusite, wad.

Silver Reef mine - cerargyrite, chalcopyrite, limonite, pyrite, tetrahedrite.

Utonia claim - galena, pyrite, rhodonite, rhodochrosite, sphalerite.

Fairfield Quadrangle - tridymite in volcanic rocks.

Free Coinage District (Stansbury Mountains) - cerussite, galena, gold, pyrite.

Gold Hill (Clifton) District (Deep Creek Mountains) - agate, allanite, axinite, dolomite, erubescite, enstatite, ferrumolybdite, indium mineralization, huebnerite, scandium mineralization, rutile.

Atwood mine - bornite, calcite, chalcanthite, chalcocite, chalcopyrite, dioptase, galena, garnet, gold, graphite, jarosite, limonite, magnetite, malachite, oligoclase, opal, pyrite, siderite, siderotil, spadaite, vesuvianite, wollastonite, zoisite.
B. Estell mine - scheelite.
Bonanza mine - arsenopyrite, cerussite, galena, scorodite, sphalerite.
Bonneville claim - calcite, chalcocite, chalcopyrite, diopside, wollastonite, zoisite.
Boston mine - arsenopyrite, cerussite, linonite, plumbosiderite, scorodite.
Cape Springs mine - andalusite, bornite, chalcocite, chalcopyrite, covellite, diopside, garnet, molybdenite, pyrite, sepiolite, spadaite, vesuvianite, wollastonite, zoisite.
Calaveras mine - amphibole, azurite, chalcedony, chalcopyrite, chrysocolla, garnet, humite, malachite, pyrite, specularite, tourmaline.
Cash Boy mine - anglesite, arsenopyrite, cerussite, galena, pyrite, sphalerite, wulfenite.
Centennial and Enterprise mines - amphibole, apatite, chalcopyrite, chalcocite, chalcopyrite, diopside, jeffersite, magnetite, malachite, scheelite, tourmaline.
Christmas Mining Company mine - barite, galena, tetrahedrite.
Climax mine - arsenopyrite, galena, pyrite, sphalerite.
Copper Bloom mine - apatite, azurite, bismuth, bismuthinite, bismutite, beidellite, chalcedony, chalcocite, chalcopyrite, copper pitch, covellite, cuprotungstate, gold, jarosite, malachite, pyrite, scheelite, tetrahedrite, tourmaline.
Copper Hill mine - azurite, malachite.
Copperopolis mine - azurite, bornite, chalcocite, chalcopyrite, diopside, garnet, malachite, scheelite.
Copper Queen-Midland Mining Company mine - arsenopyrite, azurite, chalcocite, chalcopyrite, galena, parosite, malachite, plumbosiderite, pyrite, siderite, sphalerite.
Cyclone mine - aikinite, arsenopyrite, chalcantinite, chalcocite, chalcopyrite, galena, jarosite, plumbosiderite, pyrite, wulfenite.
Doctor mine - apatite, bismuth, bornite, chalcocite, chalcopyrite, epidote, garnet, magnetite, malachite, pyrite, scapolite, scheelite, tourmaline.
E.H.B. mine - scheelite.
Enterprise mine - scheelite.
Evans claim - tetrahedrite.
Fraction Lode mine - epidote, garnet, quartz, scheelite.
Frankie mine - bornite, chalcopyrite, chrysocolla, chlorite, diopside, epidote, garnet, humite, malachite, pyrite, scheelite, titanite, tourmaline, wollastonite.
Garrison Monster mine - barite, calamine, cerussite, galena, malachite, plumbosiderite, smithsonite.
Gold Belt claim - galena.
Gold Bond mine - biotite, chrysocolla, copper pitch, danburite, diopside, epidote, fluorite, hematite, malachite, quartz, scapolite, specularite, sphalerite, tourmaline.
Gold Hill (U.S.) mine - adamite, aikinite, anglesite, arsenopyrite, austinite, azurite, beudantite, carminite, cerussite, chalcocite, chalcopyrite, chenevixite, chlorite, chrysocolla, clinochlore, conichalcite, cornwallite, cuproadamite, ferrisymplectite, galena, gyspum, jamesonite, jarosite, malachite, mimetite, nontronite, olivenite, opal, pyrite, pyrhotite, scorodite, siderite, sphalerite, stibnite, tennantite, tyrolite, wollastonite.
Gold Hill (Western Utah) mine - adamite, arsenosiderite, beudanite, conichalcite, natrojarosite, phlogopite.
Gold Hill Standard mine - anglesite, arsenopyrite, galena, plumbosiderite, scorodite, wulfenite.
Kena claim - cuprotungstate, wulfenite.
Lucy L mine - bismuth, bismuthinite, bismutite, calaverite, chalcopyrite, copper pitch, epidote, garnet, gold, malachite, scheelite, tremolite.
Lida Lull mine - azurite, bornite, chalcopyrite, covellite, diopside, garnet, malachite, scheelite.
Mascot mine - arsenopyrite, cerussite, scheelite, scorodite.
Midas mine - bornite, gold, siderite, vesuvianite.
Midland prospect - siderite.
Minniehaa mine - arsenopyrite, azurite, chrysocolla, malachite.
Monaco mine - anglesite, azurite, cerussite, copper pitch, chrysocolla, galena, malachite, opal, plumbosiderite.
Monte Del Rey mine - arsenopyrite, cerussite, scorodite.
Napoleon mine - chrysocolla, malachite.
New Baltimore mine - anglesite, arsenopyrite, azurite, cerussite, desclizite, galena, malachite, mimetite, plumbosiderite, pyrite.
Ozark mine - arsenopyrite, azurite, malachite, scorodite.
Pole Star Copper Company mine - azurite, chalcedony, conichalcite, cuprite, cuprotungstate, ferberite, malachite, olivenite, pyrite, scheelite, tetrahedrite, tourmaline, wulfenite.
Rca mine - azurite, calcite, malachite, tetrahedrite.
Reaper mine - actiononite, albite, amphibole, anatase, asborothoclase, barite, biotite, chalcopyrite, covellite, epidote, gold, galena, hematite, hornblende, ilmenite, kaolinite, leucoxene, molybdenite, serpentine, tetrahedrite, tourmaline, zircon.
Red Jacket mine - anglesite, cerussite, galena, mimetite, plumbosiderite, pyrite, wulfenite.
Rodenhous Wash - adularia, bertrandite, quartz.
Rube mine - anglesite, boulangerite, calcite, chalcopyrite, cerussite, chlorite, galena, gold, jarosite, molybdenite, plumbosiderite, pyromorphite, sphalerite, scapolite, spadaite, talc, zoisite.
Shay claim - plumbojarosite, wulfenite.

Silver and Gold Mining Company mine - arsenopyrite, cerussite, galena, limonite, pyrite, scorodite, sphalerite.

Silver King mine - anglesite, azurite, cerussite, chalcocite, chrysocolla, malachite, plumbojarosite, wollastonite.

Spotted Fawn mine - anglesite, cerussite, galena.

Star Dust mine - quartz, scheelite.

Success mine - arsenopyrite, galena, jarosite, plumbojarosite, pyrite, sphalerite.

Unadine mine - arsenopyrite, azurite, chrysocolla, limonite, magnetite, malachite, nontronite, opal, scorodite, spinel, tetrahedrite.

U. S. mine - arsenopyrite, aikinite, cerussite, chalcopyrite, cobaltite, jamesonite, jarosite, monimolite, pyrite, pyrrhotite, sphalerite, scorodite, stibnite.

Victory no. 1 mine - apatite, azurite, chalcocite, chalcopyrite, chrysocolla, malachite, pyrite, quartz, tetrahedrite, tourmaline.

Wilson Consolidated mine - bismuth, bismite, bismuthinite, bismutite, orthoclase, scheelite, stolzite.

Yellow Hammer mine - actinolite, albite, apatite, azurite, chalcopyrite, copper-pitch, gold, malachite, molybdenite, muscovite, orthoclase, powellite, scheelite, tourmaline.

GRANITE MOUNTAIN DISTRICT (Granite Mountain)
- albite, apatite, beryl, garnet, kaolinite, microcline, muscovite, orthoclase, plagioclase, samarskite, tourmaline, zircon.

Blue bell mine - azurite, beryl, chalcopyrite, fluorite, galena, garnet, malachite, samarskite, tourmaline.

Cannon Tank Canyon mine - azurite, chalcopyrite, fluorite, galena, malachite.

Desert, El Dorado, Mountain Queen mines - azurite, chalcopyrite, fluorite, galena, gold, hematite, limonite, malachite, pyrite, quartz.

GRANTSVILLE (THIRD TERM) DISTRICT (Stansbury Mountains) - cerussite, chalcopyrite, galena, malachite, pyrite.

Timpie Valley. Ruby Crystal mine - cinnabar, metacinnabar.

GREAT SALT LAKE (shores) - aragonite, bloedite, blauverite, gypsum, halite, mirabilite, thenardite.

GREAT SALT FLATS - halite, sylvite.

GREELEY DISTRICT (Topliff Hill) - cerussite, malachite, pyrite.

IBAPAI MOUNTAINS - barite, beryl (aquamarine variety), cinnabar.

JOHNSON PASS - calcite (onyx), galena.

KNOLLS - gypsite.

LAKESIDE DISTRICT (Lakeside Mountains) - anglesite, cerargyrite, cerussite, galena.

MERCUR (CAMP FLOYD) DISTRICT (Oquirrh Mountains) - aragonite, barite, lorandite, pharmacosiderite, psilomelane, quartz, rutile, scorodite, sulvanite, talc, tourmaline.

Brickyard mine - melanterite, orpiment, realgar, sulfur.

Consolidated Mercur, Daisy (Normal), La Cigale mines - gold, jasper.

Geyser - Marion mine - arsenopyrite, calcite, cerargyrite, gold, jasper.

Golden Gate mine - arsenopyrite, calcite, cinnabar, gold, orpiment, realgar, stibnite, tellurium mineralization variscite.

Hillside mine - cinnabar, orpiment, sulfur.

Mercur mine - calcite, cinnabar, orpiment, realgar, seleinite, variscite, zircon.

Mineral Hill mine - azurite, cerussite, chalcopyrite, galena, limonite, malachite, pyrite.

Sacramento mine - cinnabar, gold, jasper, orpiment, realgar, sulfur.

Sparrowhawk mine - cinnabar, jarosite, stibnite, variscite.

Sunshine mine - cinnabar, orpiment, sulfur.

NORTH TINTIC (BOULTER, CALEDONA, OASIS) DISTRICT (Boulter Mountains) (See also under Juab and Utah Counties).

New Bullion mine - anglesite, cerussite, galena, hemimorphite, pyrite, smithsonite, sphalerite.

Scranton mines - anglesite, aurichalcite, cerussite, galena, hemimorphite, hydrozincite, pyrite, pyromorphite, quartz, smithsonite, sphalerite.

OASIS DISTRICT (See NORTH TINTIC DISTRICT).

OPHIR DISTRICT (Oquirrh Mountains).

DRY CANYON AREA - apatite, barite, brochantite, calcite, chalcotrichite, chrysocolla, gold, quartz.

Brooklyn mine - azurite, cerussite, malachite, silver, smithsonite.

Desert mine - palgorskite.

Kearsarge mine - aurichalcite, azurite, covellite, chalcopyrite, galena, hesite, jarosite, limonite, malachite, plumbojarosite, smithsonite.

Moko mine - azurite, cerargyrite, cerussite, chalcopyrite, copper, galena, jarosite, limonite, malachite, pyrite, silv-
Queen of the Hills mine - azurite, cerussite, galena, limonite, malachite, tetrahedrite.

Surprise mine - argentite, chalcopyrite, galena, gold.

FOOTHILL AREA
Lakes of Killarney mine - cerargyrite, jasper, malachite.

LION HILL AREA - pyrolusite, sericite, stibiconite, utahite.

Buffalo mine - argentojarosite, aurichalcite, barite, cerussite, cerargyrite, chalcopyrite, fluorite, galena, gold, jarosite, jasper, limonite, malachite, pyrite, plumbojarosite, wad.

Chloride Point - argentojarosite, aurichalcite, barite, cerussite, cerargyrite, jasper, jarosite, limonite, malachite, plumbojarosite, pyrite, smithsonite, stibiconite, stibnite.

Douglas, Lion, Zella mines - barite, calcite, cerussite, cerargyrite, jasper, jarosite, limonite, malachite, plumbojarosite.

East Side, Empire, Iron, Monarch, Northern Light, Woodruff mines - cerussite, cerargyrite, gold, jarosite, plumbojarosite, wad.

Three Metals mine - cerussite, cerargyrite.

OPHIR HILL AREA - barite, tetrahedrite.

Admiral Dewey prospect - cerussite, galena, gypsum, jarosite, limonite.

Chicago mine - azurite, cerussite, limonite, malachite.

Cliff mine - aurichalcite, azurite, andradite, cerussite, chalcopyrite, diopside, epidote, galena, garnet, jarosite, limonite, malachite, plumbojarosite, pyrite, pyrolusite, smithsonite, spahlerite, talc, tremolite.

Hidden Treasure mine - actinolite, andradite, apatite, aurichalcite, azurite, beaverite, calcite, cerussite, chalcopyrite, cuprite, diopside, epidote, fluorite, galena, hedenbergite, hydrozincite, limonite, malachite, plumbojarosite, pyrite, smithsonite, spahlerite, topaz, wad, wollastonite.

Jim Fisk mine - argentite, cerargyrite, cerussite, pyrargyrite, silver.

Ophir Hill Consolidated, Ophir Coalition (Montana) mines - andradite, albite, argentite, apatite, anhydrite, bisnuth, calcite, chalcanthite, chalcocite, chalcopyrite, chlorite, clinozoisite, dolomite, diopside, epidote, fluorite, galena, grossularite, melanterite, phlogopite, psilomelane, pyrite, pyrosluite, pyroxhemitie, quartz, sanidine, scheelite, sericite, siderite, spahlerite, tennantite, titanite, tremolite, wad, wolframite, wurtzite, zircon.

Sacramento mine - argentite, aurichalcite, azurite, calamine, cerargyrite, cerussite, chalcopyrite, cuprite, galena, hydrozincite, limonite, malachite, plumbojarosite, pyrite, smithsonite, spahlerite, wad, wollastonite.

OQUIRRH MOUNTAINS
Manning Canyon Shale - chlorite, gibbsite, kaolinite, illite, pyrophyllite, rectorite.

Ticksville Gutch - hypersthene.

S. part - olivine.

OSCEOLA DISTRICT (Thorpe Hills) - cerussite, galena, pyrite.

OVERLAND CANYON - bismuthinite.

PINE CANYON - vesuvianite.

RUSH VALLEY (STOCKTON) DISTRICT (Oquirrh Mountains) - iddingsite, natrolite, phillipsite.

Argent mine - cerussite, galena, jarosite, limonite, plumbojarosite, pyrite.

Ben Harrison mine - arsenopyrite, cerussite, chalcopyrite, galena, gypsum, jarosite, limonite, malachite, plumbojarosite, pyrite, spahlerite.

Calument mine - cerussite, chalcopyrite, galena, jarosite, limonite, malachite, pyrite, spahlerite, sulfur, zoisite.

Galena King mine - cerussite, chalcopyrite, galena, jarosite, limonite, malachite, plumbojarosite, pyrite, spahlerite.

Honcerine mine - anglesite, apophyllite, aragonite, arsenopyrite, aurichalcite, beudanite, cerussite, chalcopyrite, clinozoisite, diopside, epidote, fluorite, galena, gold, jarosite, limonite, malachite, mimetite, nontronite, plumbojarosite, pyrite, pyromorphite, sepiolite, serpentine, smithsonite, spahlerite, tetrahedrite, wad, wollastonite.

Mesquite mine - cerargyrite, cerussite, galena, jarosite, limonite, plumbojarosite, spahlerite, pyrite.

Muerbrook mine - anglesite, cerussite, chalcopyrite, galena, gypsum, jarosite, limonite, malachite, melanterite, plumbojarosite, pyrite, spahlerite.

Salvation-Hercules mine - cerargyrite, cerussite, chalcopyrite, galena, jarosite, limonite, malachite, plumbojarosite, pyrite, spahlerite.

Settlement Canyon - analcime, actinolite, grossularite, pyroxtinite, thompsonite.

Soldier Creek - epideminite, grossularite, hematite, wollastonite.

Southport mine - cerussite, galena, pyrite.

Tip Top mine - chalcopyrite, galena, pyrite, spahlerite.

SALDURO - bischofite, carnallite, halite, kainite, kieserite, polyhalite, sylvite.

SHEEP RIDGE (east of) - nepheline in basalts and sills.
SILVER ISLAND (SILVER ISLET) DISTRICT (Silver Island Mountains).
*Carrie Mack property* - azurite, barite, hindheimite, cerussite, galena, jamesonite, malachite, pyrite.

SILVER ISLET DISTRICT (See SILVER ISLAND DISTRICT).

STANSBURY MOUNTAINS
*Amatrice Hill* - chalcedony, crandallite, jasper, millisite, variscite, wardite.
*Grantsville (near)* - calcite (onyx).
*Mack Canyon* - labradorite, olivine.
*Manning Canyon Shale* - chlorite, gibbsite, kaolinite, illite, pyrophyllite, rectorite.
*Muskcat Canyon* - labradorite, olivine.
*North Willow Canyon* - augite, biotite, labradorite.
*Salt Mountain* - labradorite, olivine.

STOCKTON DISTRICT (See RUSH VALLEY DISTRICT).

TOOELE DISTRICT (Oquirrh Mountains) - cerussite, galena, malachite, pyrite.

WENDOVER - bischofite, carnallite, halite, kainite, kieserite, polyhalite, sylvite.

WEST MOUNTAIN DISTRICT (See BINGHAM DISTRICT).

WILD CAT MOUNTAINS
*Silver Queen (Wild Cat) mine* - barite, chalcopyrite, fluorite, gold, pyrite, silver, prosopite.

WILLOW SPRINGS DISTRICT (Deep Creek Mountains) - azurite, cerussite, galena, chalcopyrite, malachite.

UINTAH COUNTY

ARGYLE CREEK - argulite.

ASILEY CREEK - carnotite.
*Woodside Iron prospect* - hematite.

ASPHALT RIDGE - asphalt.

ASPHALT WASH - gilsonite.

BASSFTT MINE - galena.

BLACK DRAGON MINE - gilsonite.

BONANZA MINE - gilsonite, petroleum in gilsonite vein.

BROWNS PARK AREA - azurite, bornite, chalcocite, hematite, malachite, pyrite.
*Red Creek* - tyuyamunite.

BRUSH CREEK - collophane, carbonate apatite, fluorapatite, francolite, phosphorite, rare earths.

BRUSH CREEK DISTRICT (Uinta Mountains).
*Little Alta mine* - azurite, cerargyrite, malachite, smithsonite.

BULLIONVILLE - azurite, malachite.

CARBONATE DISTRICT (Uinta Mountains).
*Dyer mine* - azurite, bornite, chalcocite, hematite, malachite, pyrite.
*Jessie Ewing mine, Red Creek, Willow Creek* - azurite, malachite.
*Pope Iron mine* - hematite.

EVACUATION CREEK - asphalt.

FORT DUCHESNE - gilsonite.

FRANDSON CANYON - collophane, carbonate apatite, fluorapatite, francolite, phosphorite, rare earths.

GREEN RIVER DISTRICT.
*Cub Creek* - placer chromite, gold.
*Flaming Gorge Reservoir in Horseshoe Bend* - placer gold.

GREEN RIVER FORMATION - abelsonite, analcite, ankerite, barytocalcite, burbankite, calcite, dawsonite, dolomite, elpidite, garselite, illite, leucophenelite, nahcolite, neighborite, norstrandite, eckelsite, shortite, smectite, pyrite, wurtzite.

HELLS HOLE CANYON - analcite, apophyllite.

JENSON - monazite in placer sands.
*Bonnie Bell claims* - autunite.

LITTLE BRUSH CREEK - collophane, carbonate apatite fluorapatite, francolite, phosphorite, rare earths.

LITTLE SPLIT MOUNTAIN - azurite, chalcocite, gold, malachite.

PR SPRINGS - asphalt.
RAINBOW MINE - gilsonite.

ROCK CREEK - collophane, carbonate apatite, fluoroapatite, francolite, phosphorite, rare earths.

SILVER KING MINE - cerussite.

SNOW CLAIMS - autunite, torbernite.

SPLIT MOUNTAIN - glauconite, in curtis Formation.

STEINAKER DRAW - gypsum.

UTELAND KNOLL DISTRICT (Ouray) - azurite, chalcostite, gypsum, halotrichite, ilsemannite, malachite, molybdenite, pyrite.

VERNAL (N.) - analcite in Chinle Formation; glauconite in Curtis Formation.

WHITE RIVER CANYON - analcite, apophyllite.

WHITEROCKS CANYON - asphalt, gypsum.

UTAH COUNTY

ALPINE (2 mi. W.) - jasper.

ALPINE DISTRICT (Wasatch Mountains) - orthoclase, quartz.
Alpine-Galena property - argentite, cerussite, galena.
Lucky Chance mine - galena, pyrite.

AMERICAN FORK DISTRICT (Wasatch Mountains) - molybdenite, monticellite, smithsonite, tetradyomite.
Bay State mine - galena, kermesite, sphalerite.
Bog mine - barite, galena, quartz, pyrite, sphalerite, tetrahedrite.
Dutchman (Wild Dutchman) mine - barite, cerussite, chalcopyrite, galena, limonite, pyrite, sphalerite.
Lake Solitude - spinel.
Mary Ellen, Live Yankees mines - chalcopyrite, galena, jamesonite, pyrite.
Miller mine - argentite, azurite, cerussite, galena, limonite, malachite, plumbojarosite, wad, wulfenite.
Pacific mine - barite, galena, pyrite, sphalerite, tetrahedrite.
Pittsburgh mine - cerussite, galena, limonite, plumbogossanite, sericite.
Silver Digger mine - galena, pyrite, sphalerite, tetrahedrite.
Water Fall vein - galena, pyrite, sphalerite, tetrahedrite.
Yankee mine - barite, chalcopyrite, gold, galena, jarosite, pyrite, sphalerite, tetrahedrite.

BEVERLY HILLS
Manning Canyon Shale - chlorite, gibbsite, kaolinite, illite, pyrophyllite, rectorite.

CALEDONIA DISTRICT (See NORTH TINTIC DISTRICT)

CEDAR VALLEY - kaolinite, pyrophyllite in Manning Canyon Shale.

CLAY CANYON (Oquirrh Mountains) - bedellite, canadialite, dehnite, deltaire, dennisonite, davidsonite, englishite, gordonite, goyazite, kolbeckite, lehite, lewistonite, millisite, montgomeryite, overite, pseudowavellite, sterrettite, variscite, wardite.

COLTON
Higgins, James Peak (Brown Bear), Kyune Canyon, Midnight, Miller, Pleasant Valley, Thomas Ranch, Town mines - albertite, ingramite, nigrite, ozocerite.

EAST TINTIC DISTRICT (East Tintic Mountains) - altaite, albite, allophane, alunite, alanite, anatase, arenopyrite, baydonite, beaverite, beidellite, bilimite, bindheimite, bismuthinite, boehmite, borinite, calcite, celadonite, chalcantite, chenevixite, cimolite, claudetite, chalcostite, clinochlore, collophane, conichalcite, copiapite, copper, coquimbite, crederite, cuprite, cuprogossanite, delessite, diaspose, dolomite, endellite, epsonite, fationite, faratsihite, ferrogossalite, freibergite, gekejutite, gibbsite, goyalite, gunningite, halloysite, hydromica, heulandite, hisingerite, jamesonite, jenkinsite, kieserite, klaprothite, leucoxene, leuchtenbergite, linarite, mardlite, miargyrite, montmorillonite, mordenite, nontronite, okenite, olivenite, pargasite, penninite, pisanite, potash alum, rhomboclasite, rigidolite, roemerite, rutile, saponite, sericite, serophosphate, sylvanite, szomolnokite, tenorite, tetradyomite, thompsonite, voltaite, zoisite, zunyite.
Apex Standard mine - anglesite, argentite, azurite, cerargyrite, cerussite, enargite, galena, gold, hesuite, malachite, pyargyrite, pyrite, pyrolusite, silver, sphalerite, tetrahedrite.
Black Jack (Winberg), White Cloud claims - pyrolusite.
Burgin mine - anglesite, anilerite, argentite, argentjarosite, aurichalcite, barite, birnessite, brochantite, cerussite, chalcopyrite, cryptomelane, dickite galena, goethite, gold, hetaerolite, hollandite, hydromica, jaipaite, jasper, jarosite, kaolinite, lanarkite, limonite, marasite, massicot, melanterite, mimetite, minium, nsutite,
polybasite, pyrite, pyrolusite, quartz, quenelite, rhodochrosite, siderite (manganoan), smithsonite, sphalerite, silver, szomolnokite, tetrahedrite.

**Eureka Bullion mine** - anglesite, azurite, cerussite, chalcopyrite, enargite, galena, gold, malachite, pyrite, sphalerite, tetrahedrite.

**Eureka Lily mine** - azurite, barite, bismite, bismuthinite, bornite, calaverite, cerargyrite, cerussite, chalcocite, chalcopyrite, enargite, galena, gold, hemimorphite, hessite, jamesonite, malachite, petzite, plumbojarosite, polybasite, proustite, pyrite, silver, smithsonite, sphalerite, tetrahedrite.

**Eureka Standard mine** - anglesite, argentite, azurite, barite, bornite, calaverite, cerussite, chalcocite, chalcopyrite, covellite, enargite, galena, gold, hessite, kaolinite, malachite, marcasite, petzite, pyrite, sphalerite, sylvanite (krennerite), tetrahedrite.

**Iron King mine** - argentite, barite, enargite, galena, gold, hematite, hessite, limonite, pyrite, pyrolusite, tetrahedrite.

**Larsen Clay pits** - allophane, alunite, endellite, gibbsite, halloysite, kaolinite, pyrite.

**North Lily mine** - anglesite, argentite, barite, billingsleyite, bismuthinite, cerussite, chalcopyrite, cubanite, dickite, enargite, endellite, galena, gold, greenockite, hemimorphite, hessite, kaolinite, krennerite, luzonite, montmorillonite, petzite, plumbojarosite, pyrite, smithsonite, sphalerite, tennantite, tetrahedrite, wurtzite.

**Tintic Standard mine** - argentite, argentojarosite, anglesite, azurite, barite, bismuthinite, cerargyrite, cerussite, chalcophanite, chalcopyrite, coronadite, enargite, galena, gold, halotrichite, hematite, hessite, jasperite, krennerite, limonite, luzonite, montmorillonite, petzite, plumbojarosite, pyrite, smithsonite, sphalerite, tennantite, tetrahedrite, wurtzite.

**Trinity mine** - anglesite, argentojarosite, argentite, azurite, bornite, cerussite, chalcocite, chalcopyrite, covellite, enargite, galena, gold, hematite, hemimorphite, hydroxy, jarosite, kaolinite, krennerite, limeonite, luzonite, malachite, marcasite, pearceite, petzite, plumbojarosite, polybasite, psilomelane, pyrite, pyrolusite, rhodochrosite, siderotile, sphalerite, stromeyerite, szomolnokite, tetrahedrite, tennantite, wad.

**Zuma mine** - barite, enargite, galena, pyrite, sphalerite.

**FOX HILLS (S. end Lake Mountain)** - endellite, halloysite, kaolinite, montmorillonite, olivine in basalts.

**GILLULY (8 mi. N.W.)** - asphalt.

**JORDAN NARROWS, OREM, SARATOGA, SOLDIERS PASS QUADRANGLES** - kaolinite, pyrophyllite in the Manning Canyon Shale.

**LAKE BONNEVILLE SHORELINE** - thinolite as a cement in gravels.

**LAKE MOUNTAINS**

*Manning Canyon Shale* - chlorite, gibbsite, kaolinite, illite, pyrophyllite, rectorite.

**LEHI DISTRICT (Lake Mountain)**

*Manning Canyon Shale* - chlorite, gibbsite, kaolinite, illite, pyrophyllite; rectorite.

**PELICAN POINT AREA**

*Canyon, Foothill and Hilltop, Pelican and Utah Valley veins* - aragonite, calcite.

**Hutchings claim** - limonite pseudomorphs after pyrite.

**Philippine, Potter claims** - calcite, (onyx).

**PFEIFFER CANYON AREA** - calcite (onyx).

**Blue Rock claim** - pyrolusite.

**WEST SLOPE AREA**

*Wildcat mine* - cryptomelane, wad.

**LITTLE COTTONWOOD STOCK** - apatite, allanite, biotite, hornblende, magnetite, microcline, plagioclase, orthoclase, quartz, sphene, zircon.

**NORTH TINTIC (CALEDONIA, OASIS) DISTRICT** (East Tintic Mountains) (See also under Juab and Tooele Counties).

**Blowhole Hill property** - cerussite, galena.

**Fields group (Fremont Canyon)** - jasper, pyrolusite.

**Lehi-Tintic, Tintic Empire, Tintic Paymaster mines** - anglesite, cerussite, galena, jasper, pyrite.

**North Tintic claims** - pyrolusite.

**Oxen mine, Tip Top tunnel** - psilomelane, pyrolusite, wad.

**Selma mine** - anglesite, cerussite, limonite, hematite, pyrite.

**OASIS DISTRICT** (See NORTH TINTIC DISTRICT).

**PAYSON DISTRICT** (Wasatch Mountains).

**Nelson mine** - galena, gold, limonite, pyrite.

**Syndicate mine** - barite, cerussite, galena, limonite, smithsonite, sphalerite.

**PROVO DISTRICT** (Wasatch Mountains).

**Monarch (Buckley) mine** - argentite, calcite, cerussite,
dolomite, galena, hematite, limonite, pyrite.

SANTAQUIN DISTRICT (Wasatch Mountains).
Black Balsam vein - calcite, chalcopyrite, fluorite, malachite, pyrite.
Blue Eagle prospect - calcite, cerussite, vanadinite.
Copper Bullion prospect - chalcopyrite, malachite, specularite, pyrite.
Sally Ann prospect - chalcopyrite, cuprite, malachite.
Santaquin Central tunnel - chalcopyrite, pyrite, specularite.
Union Chief mine - barite, calcite, cerussite, cerargyrite, galena, hematite, limonite, sulfur.

SILVER LAKE DISTRICT (Wasatch Mountains).
Deer Creek - brucite, coerdierite, garnet, gold, graphite, hematite, magnete, molybdenite, olivine, prehnite, periclase, psilomelane, quartz, scheelrite, siderite, sphene, wollastonite.
Mayblov Extension claim - scheelrite.
Milkmaid mine - actinolite, anglesite, andradite, argentite, barite, hornite, cerussite, chalcopyrite, epidote, galena, gold, grossularite, pyrite, scheelrite, tetrahedrite, zircon.
Ontario mine - actinolite, anglesite, argentite, barite, cerussite, chalcopyrite, galena, gold, pyrite, sphalerite, tetrahedrite.
Silver Creek - andradite, brucite, coerdierite, epidote, grossularite, graphite, hematite, magnete, olivine, periclase, quartz, siderite, zircon.

SPANISH FORK CANYON.
Diamond Fork - sulfur.
Little Diamond Fork - phosphorite.

SPANISH FORK DISTRICT (Wasatch Mountains).
Dream (Relief) mine - no production of metals.

THISTLE JUNCTION - geodes containing asphalt.

THORPE HILLS - azurite, malachite, salvanite, volbor-tite.
Manning Canyon Shale - chlorite, gibbsite, kaolinite, illite, pyrophyllite, rectorite.

UTAH DISTRICT (Long Ridge).
Alpha, Emerald, Lucky Boy, Queen of the West, Spalding. Trotter mines - gypsum, hematite, jasper, limonite, pyrolusite, psilomelane, wad.

WELLS CANYON (S. Oquirrh Mountains) - calcite, eardleyite, quartz, smithsonite.

WASATCH COUNTY

BLUE LEDGE DISTRICT (Bald Mountain).
Glencoe, McHenry, Valeo mines - cerussite, galena, gold, pyromorphite, sphalerite.
Mayflower mine - bornite, chalcopyrite, galena, gold, pyrite, rhodochrosite, sphalerite, siderite, silver.
Ontario tunnel - magnesioferrite.

BONANZA FLAT - calcite, garnet, muscovite.

CLAYTON PEAK - chabazite, spinel, vesuvianite.

ELKHORN DISTRICT (Wasatch Mountains).
Crawford property - cerussite, galena, gold, tetrahedrite.
Nelson, Queen properties - cerussite, galena, gold, tetrahedrite.

HOWLAND DISTRICT (See SNAKE CREEK DISTRICT).

KEETLEY AREA - alunite, dickite, halloysite, kaolinite, montmorillonite.

MIDWAY (N.) - phosphorite.

RHODES PLATEAU (WOODLAND) DISTRICT (Uinta Mountains).
East Star no. 1, Gray Hawk properties - pyrolusite.
Ferry Iron deposit - hematite, magnetite, red ochre, specularite.

SNAKE CREEK (HOWLAND, WHITE PINE) DISTRICT (Wasatch Mountains) - grossularite, penninite, phosphorite.
Revelator mine - cerussite, galena, pyromorphite, sphalerite.
West Quincy mine - cerussite, galena, gold, sphalerite.

SOLDIER SUMMIT.
Calmer Brothers, Soldier Summit, U. S. mines - albertite, ingranite, nigrit, ozocerite.

STRAWBERRY AREA - barite, along Charleston Thrust Fault.

UINTA MOUNTAINS (S. W. flank) - carbonate apatite, collophane, fluorapatite, francolite, phosphorite.

WHITE PINE DISTRICT (See SNAKE CREEK DISTRICT).
WOODLAND DISTRICT (See RHODES PLATEAU DISTRICT).

WASHINGTON COUNTY

BEAVER DAM MOUNTAINS - realgar, scheelite.

BEAVER DAM WASH - agate, silicified wood.

BULL VALLEY DISTRICT (Bull Valley) - calcite, gold.
Bucky claim - hematite.
Big Mountain claims - hematite, magnetite.
Cove Mountain - hematite.
Emma claims - hematite, magnetite.
Enterprise claims - hematite.
Pilot claims - hematite, magnetite, orpiment, realgar, stibnite.
Redtop claims - magnetite.
Soft Iron claims - hematite, red ocher.

CASTLE CLIFF (near) - agate, silicified wood.

CENTRAL (near) - chaledony in basalt flows.

DRY CANYON - aurichalcite.

ENTERPRISE (near) - binnessite.

GUNLOCK (W.) - stibnite in silicified limestone.

HARRISBURG DISTRICT (See SILVER REEF DISTRICT).

HURRICANE CLIFFS - autunite.

MINERAL MOUNTAIN.
Beauty Knoll claims - alunite, halloysite, kaolinite.
Emma mine - antigorite, azurite, brucite, chlorite, chrysocolla, forsterite, magnetite, malachite, magnete-
tite, periclase, spinel.
Gregerson mine - brucite, chrysocolla, malachite, magnetite, serpentine.
Picadilly mine - limonite, magnetite, pyrite.

SANTA CLARA DISTRICT (Santa Clara) - autunite, carnottie, silicified wood.
Black Beauty no. 1 claim - celestite, gypsum, pyrolus-
tite.

SILVER REEF (HARRISBURG) DISTRICT (Leeds) - agularite, bornite, calcite, chalcopyrite, cuprite, gypsum, jasper, kaolinite, montmornillonite, muscovite, pyrite, quartz, selenium mineralization, tenorite.
B. Reef mine - volborthite.
Barbee and Walker mine - chalocite, silver.
Buckeye mine - autunite, carnottie, malachite.
Butte Reef mine - carnottie.
California mine - argentite, cerargyrite.
Cobb mine - chalcocite, embolite.
Doyle shaft - carnottie.
Duffin, Toquerville mines - autunite, chalcocite.
East Reef mine - autunite, carnottie, malachite.
Emily June mine - chalcocite, malachite.
Last Chance mine - chalcocite.
Leeds mine - argentite, azurite, cerargyrite.
Maud claim - malachite.
Newton mine - azurite.
Regua mine - argentite, azurite, cerargyrite, malachite.
Savage mine - argentite, cerargyrite.
Thompson’s mine - chalcocite, silver.
Tecunseh Hill - cerargyrite, chalcocite, volborthite.
Wells pit - volborthite.

ST. GEORGE (S.) - gypsum.

TOQUERVILLE - gypsum.
Wallace claims - pyrolusite.

TUTSAGUBET DISTRICT (Beaver Dam Mountains).
Apex (Dixie) mine - adamite, aurichalcite, azurite, cerussite, copper, cuprite, hydrozincite, jarosite, limo-
nite, malachite, plumbojarosite, rosasite, smithsonite.
Paymaster mine - cerussite, jarosite, malachite, plumbo-
jarosite.

VIRGIN ANTICLINE (N. end) - autunite.

VIRGIN RIVER - gypsum, halite.

WAYNE COUNTY

CAINEVILLE.
Basal Entrada Formation - huge selenite crystals.
T. 27 S., R. 9 E. - anatase, monazite, staurolith, rutile, tourmaline, zircon in Ferron Sandstone.

CAPITOL REEF MONUMENT - carnottie, sideronat-
rine, torbernite.

CAPITOL WASH - azurite, asphalt, malachite, urano-
cher.

CAPITOL WASH TO SHEETS GULCH - azurite, mala-
chite, metatorbernite.
CHIMNEY ROCK to TANTLUS FLAT - alunite, brochantite, chalcanthite, metatorbernite.

COLEMAN CANYON to OAK CREEK - carnotite, jaro site, metarossite, metatorbernite, schroeckingerite.

FREMONT RIVER.
South Wash - huge selenite crystals.

FRUITA (S.E. in Grand Wash).
Oyler mine - alunite, becquerelite, carnotite, chalcanthite, chalcopyrite, gypsum, johannite, lepidocrocite, metatorbernite, pitchblende, pyrite, schoepite, sklodowskite, torbernite, zippeite.

SPRING GULCH - pyrolusite.

FRUITA TO HANKSVILLE - agate, chert, silicified wood.

GRAND WASH TO CAPITOL WASH - alunite, asphalt, jaro site, malachite, metatorbernite, zippeite.

HANKSVILLE (N.) - carnotite.

HENRY MOUNTAINS.
Mt. Ellen (N. end) - carnotite.
Coal basin (N. W. Flank Mt. Ellen) - jet.

LAST CHANCE GULCH - anhydrite, gypsum.

MINERS MOUNTAIN DISTRICT (Miners Mountain) - chalcopyrite, galena, pyrite.
Old Faithful, Wonder Copper no. 1 mines - azurite, limonite, malachite.

MUDDY RIVER - anhydrite, carnotite, gypsum.

NOTOM BENCH - carnotite.

POISEN SPRINGS - carnotite.

RABBIT VALLEY.
Old Dixon prospect - carnotite, jaro site, limonite, silicified wood.

TORREY (near) - agate, jasper, metazeunerite, silicified bone and wood.
T. R. Lode no. 1 mine - azurite, limonite, malachite.

UPHEAVAL DOME - carnotite.

WATERPOCKET FOLD - carnotite.

WEBER COUNTY

COLD WATER CANYON - azurite, barite, fluorite, gold, malachite.

FREMONT ISLAND DISTRICT (Fremont Island) - chalcopyrite, galena, gold, pyrite, silver.

HUNTSVILLE (10 mi. E.) - pyrolusite.

JUNCTION DISTRICT (See WEBER DISTRICT).

OGDEN - fluorite, above “W” on mountain.

OGDEN CANYON - garnet, hornblende, limonite, phosphorite, uraninite.

SIERRA MADRE DISTRICT (Wasatch Mountains) - epidote, garnet, hematite, molybdenite, quartz.
Eldorado property - anglesite, bornite, calcite, cerussite, fluorite, galena, malachite.
King Solomon vein - chalcopyrite, gold, malachite, pyrite.
Napoleon-Maghera group - biotite, chalcopyrite, hornblende, pyrite.

STRONGS CANYON - garnet.

WEBER (JUNCTION) DISTRICT (Wasatch Mountains) - hematite, magnetite.
New Azurite claim - azurite, galena, malachite.
Norman mine - fluorite.
Payday claims - psilomelane, pyrolusite.
Standard Mining Company mine - galena, malachite.

CHAPTER III
MINERALS OF UTAH

ABELSONITE

ABERNATHYITE
Hydrous potassium uranium arsenate, KUO₂AsO₄·3H₂O. Tetragonal.

Emery County: San Rafael district: Temple Mountain, Fuemrol no. 2 mine.

ACANTHITE


Utah County: East Tintic district: Eureka Lily mine.

ACMITE


Duchesne County: Carter Oil Company wells; Green River Formation; Sinclair Mortenson well.

ACTINOLITE

Calcium-magnesium-iron amphibole, Ca₂(Mg, Fe)₅Si₈O₂₂(OH)₂. Monoclinic. Crystals short or long bladed, columnar or fibrous, granular massive. H. 5-6. G. 3-3.2. Cleavage prismatic at angle of 56 degrees. Color bright green and grayish green. Commonly found in crystalline schists.

Beaver County: Granite district: Bismuth mine; Star district: Moscow mine.

Grand County: La Sal Mountains (North Mountain); Miners Basin district: Dewey, M.I.F. mines.


Juab County: West Tintic district: Tintic Western mine.

Salt Lake County: Big Cottonwood district; Bingham district: Little Cottonwood district; Alta mine.

Tooele County: Gold Hill district: Reaper, Yellow Hammer mines; Ophir district: Ophir Hill area; Hidden Treasure mine; Rush Valley district: Settlement Canyon.

Utah County: Silver Lake district: Milkmaid, Ontario mines.

ADAMITE


Juab County: Tintic district: Iron Blossom mine.

Tooele County: Gold Hill district: Gold Hill (Western Utah) mine.

Washington County: Tintagel district: Apex (Dixie) mine.

ADULARIA (See ORTHOCLASE)

AGERITE (See WURTZILITE)

AEGIRINE (See AEGIRITE)

AGERITE


Grand County: La Sal Mountains: North Mountain.

San Juan County: La Sal Mountains: Middle Mountain, Brumley Ridge.

AEONITE (See WURTZILITE)

AGATE

(See CRYPTOCRYSTALLINE QUARTZ)

AGUARITE


Washington County: Silver Reef district.

AIKINITE


Salt Lake County: Little Cottonwood district: South Hecla mine.

Tooele County: Gold Hill district: Gold Hill (U.S.), U.S. mines. Deep Creek Mountains: Cyclone, Leap Year mines.
ALABASTER (See GYPSUM)

ALASKAITE


Salt Lake County Big Cottonwood district: Maxfield mine.

ALBERTITE

An asphaltic pyrobitumen. Occurs in veins and fillings in the Green River Formation.

Duchesne County near Duchesne. 
Utah County Colton: Higgins, James Peak (Brown Bear), Kyune Canyon, Midnight, Miller, Pleasant Valley, Thomas Ranch, Town mines.

Wasatch County Soldier Summit: Culmer Brothers, Soldier Summit, U. S. mines.

ALBITE


Beaver County East of Rock Corral.

Juab County Spring Creek district: Queen of Sheba mine.

Millard County House Range: Amasa Valley, Notch Peak intrusive.

Piute County Marysvale district.

Sevier County Henry district: Trinity prospect.

Tooele County Gold Hill district: Reaper, Yellow Hammer mines; Granite Mountain district; Ophir district: Ophir Hill area - Ophir Hill Consolidated, Ophir Coalition mines.

Utah County East Tintic district.

ALISONITE (See GALENA)

ALLOPHANE


Kane County Kaibab fault, west side.

Piute County Marysvale district.

Salt Lake County Bingham district: Bingham Copper pit.

San Juan County White Canyon district: Elk Ridge: Sandy No. 3 mine; Happy Jack mine.

Utah County East Tintic district: Larsen clay pits.

ALMANDINE (See SPINEL)

ALMANDITE (See GARNET)

ALTAITE


Utah County East Tintic district.

ALUMIAN


Utah County East Tintic district.

ALUMINITE


Grand County Green River, Crossing of the D. and R. G. Railroad.

Kane County Alum Hills; Paria, 9 miles south.

Piute County Marysvale district.
ALUNITE


**Beaver County**
- Indian Peak Range: Big Pinto Spring: Pine Grove district; Southern Wah Wah Mountains: Blawn Peak, NG Subareas A, B, C, and D deposits, SX deposit. Newton district: Sheep Rock mine; San Francisco district: Horn Silver mine; White Mountain.
- Box Elder County: Lucin district: Copper Mountain, Tecoma Hill mines.
- Iron County: Modena, 1 mile northwest; Needles Range: PV deposit; Southern Wah Wah Mountains: SX deposit.
- Millard County: Church Hills: Stevens prospect.
- Piute County: Deer Trail Mountain-Alunite Ridge; Gold Mountain district; Marysvale district: Al-Kee-Mee, Aluminum Bar, Aluminum Queen, Big Chief, Big Star, Close In, East Slope no. 2, J. and L. Alunite, Manning Creek, Mary's Lamb, Marysvale Peak, North Star, Pittsburg, Potash Butte, Silica Hills, White Hills, White Horse, Yellow Jacket mines; Mount Baldy district: Aetna, Alunite Ridge, Bradburn, Christmas mines, Close In, Crystal, L. and N., Mineral Products, Sunshine mines; Sevier Canyon.
- San Juan County: Red Canyon district: Markey no. 3 mine; White Canyon district: W. N. mine.
- Sevier County: Rock Candy Mountain.
- Tooele County: Rush Valley district: Settlement Canyon.
- Uintah County: Chinle Formation near Vernal; Green River Formation south of Ouray. Hells Hole Canyon; White River Canyon.

**ALUNOGEN**

Hydrous aluminum sulfate, \( \text{Al}_2\text{(SO}_4\text{)}_3\cdot\text{16H}_2\text{O} \). Triclinic. Usually in delicate fibrous masses, crusts, or in powder form. H. 1.5-2. G. 1.65-1.8. Cleavage perfect. Luster vitreous to silky. Colorless, white, yellowish, or reddish by impurities.

**Amery County** San Rafael district: Dexter group.
- Garfield County: Coyote Creek district: Hampton mine.

AMMONIA ALUM

Hydrous ammonium aluminum sulfate, \( (\text{NH}_4)\text{Al(SO}_4\text{)}_2\cdot\text{12H}_2\text{O} \). Isometric. Occurs as fibrous or columnar masses, or as efflorescences. H. 1.5. G. 1.6. Fracture conchoidal. Luster vitreous, fibrous masses silky. Colorless to white. Taste sweetish and astringent. **Kane County** Kaibab fault, west side.

AMMONIOJAROSITE

Basic sulfate of ammonium and ferric iron, \( (\text{NH}_4)\text{Fe}_3\text{(SO}_4\text{)}_2\cdot\text{(OH)}_6 \). Hexagonal. Occurs as small lumps and irregular flattened nodules, composed of microscopic tabular grains. G. 3.1. Color light yellow. Luster dull, waxy to earthy. **Kane County** Kaibab fault, west side.

AMPHIBOLE (See also ACTINOLITE, HORNBLENDE, TREMOLITE)

Series of complex silicates of magnesium, iron, calcium, and aluminum or various combinations of these elements. Amphibole is a common rockforming mineral in both igneous and metamorphic rocks. **Tooele County** Gold Hill district: Calaveras, Centennial and Enterprise, Reaper mines.

ANALCIME (See ANALCITE)

ANALCITE

Hydrous sodium aluminum silicate, \( \text{NaAlSi}_2\text{O}_6\cdot\text{H}_2\text{O} \). Isometric. Usually forms trapezohedrons, also massive granular, compact. H. 5-5.5. G. 2.2. Cleavage cubic. Fracture subconchoidal. Brittle. Luster vitreous. Colorless, white: occasionally gray, greenish, yellowish, or reddish. A zeolite.

**Duchesne County** Carter Oil Company wells; **Green River Formation; Sinclair Mortenson well.** **Iron County** in andesite flows near Paragonah.
- **Tooele County** Rush Valley district: Settlement Canyon.
- **Uintah County** Chinle Formation near Vernal; Green River Formation south of Ouray. Hells Hole Canyon; White River Canyon.

ANATASE

Titanium dioxide, \( \text{TiO}_2 \). Tetragonal. Commonly pyramidal crystals, also tabular. H. 5-5.6. G. 3.9. Cleavage perfect. Fracture subconchoidal. Brittle. Color various shades of brown, passing into indigo-blue and black; also greenish, blue-green, lilac, gray, and
rarely colorless. Streak colorless to pale yellow. Transparent.

**Piute County** Mount Baldy district: Deer Trail mine.

**Tooele County** Gold Hill district: Reaper mine.

**Utah County** East Tintic district.

**Wayne County** Caneville.

**ANDALUSITE**


**Beaver County** Beaver Lake district.

**Juab County** Trout Creek district: Bacon mine.

**Tooele County** Deep Creek Mountains; Gold Hill district: Cane Springs mine.

**ANDERSONITE**


**Grand County** Thompsons district: Parco no. 23, Skinny no. 1 mines.

**Emery County** San Rafael district: Copper Globe mine.

**San Juan County** Cane Wash: Atomic King no. 2 mine; Elk Ridge.

**ANDESINE**


**Iron County** Paragonah: Iron Peak.

**Millard County** Twin Peaks.

**ANDRADITE** (See GARNET)

**ANGLESITE**


**Beaver County** Bradshaw district: Cave mine; Pine Grove district; San Francisco district: Horn Silver mine; Lincoln district: Creole, Lincoln mines; Star district: Cedar-Talisman, Estelle, Gold Crown, Hoosier Boy, Harrington-Hickory, Hub, Moscow, Rebel, Red Warrior, White Rock, Wild Bill mines.

**Box Elder County** Ashbrook district: Vipont mine; Lucin district: Copper Mountain, Teocina Hill mines; Newfoundland district.

**Cache County** Paradise district.

**Davis County** Farmington district: Parrish Canyon.

**Emery County** San Rafael district: Copper Globe mine.

**Juab County** Fish Springs district: Carnation, Emma, Galena, Utah mines; Tintic district: Bullion Beck, Eagle, Blue Bell, Eureka Hill, Gemini, Godiva, Hunsbug, Sunbeam, Swansea mines; West Tintic district: 88, Scotia, War Eagle mines.

**Millard County** Leamington district: Arbroath, Leamington Mining Company, Yellowstone mines.

**Morgan County** Argenta district: Carbonate Hill, Carbonate Gem mines.

**Piute County** Mount Baldy district: Deer Trail mine.

**Salt Lake County** Big Cottonwood district, Eclipse mine, Bingham district: Galena, Old Jordan mines; Little Cottonwood district: Emma, Little Emma, Michigan-Utah mines.

**Summit County** Park City district: Comstock, Daly, Little Bell, Nail Driver, Ontario, Scottish Chief, Silver King, Woodside mines.

**Tooele County** Dugway district: Bryan claim; Gold hill district: Cash Boy, Gold Hill (U. S.), Gold Hill Standard, Monroe, New Baltimore, Red Jacket, Rube, Silver King, Spotted Fawn mines; North Tintic district: New Bullion, Sacramento mines; Rush Valley district: Honeerine, Muerbrook mines; Lakeside district.

**Utah County** East Tintic district: Apex Standard, Burgin, Eureka Bullion, Eureka Lily, Eureka Standard, North Lily, Tintic Standard, Trixie mines; North Tintic district: Lehi Tintic, Tintic Empire, Tintic Paymaster, Selma mines; Silver Lake district: Milkmaid, Ontario mines.

**Weber County** Sierra Madre district: Eldorado property.

**ANHYDRITE**

Calcium sulfate, CaSO$_4$. Orthorhombic. Crystals not common, usually massive, granular. H. 3-3.5. G. 2.9. Cleavage good. Fracture uneven. Brittle. Luster vitreous to pearly. Color white, gray, bluish, reddish. Transparent to translucent. Occurs in association with gypsum. In southeastern Utah it is found in the Paradox Member of the Hermosa Formation; in east-central Utah it occurs in the Carmel and Summerville Formation; in
central Utah in the Arapien Shale; in southwestern Utah it occurs in the Kaibab, Moenkopi, Carmel, and Curtis Formations; in northeastern Utah it occurs in the Thaynes, Green River, and Carmel Formations.

Beaver County Preuss district: Blackbird, Cactus mines.
Duchesne County Green River Formation; Lake Fork.
Ehern County Cedar Mountains; Fullers Bottom; Horn Silver Gulch; San Rafael River.
Garfield County Water Pocket Canyon.
Grand County Cane Creek: Fisher Valley; Gypsum Hills; McCarthey well; Moab Valley; Onion Creek; Paradox basin; Salt Valley; Seven Mine Anticline; Texas Gulf Potash mine, Thompsons area.
Iron County Cedar Canyon; Kanarraville.
Juab County Mona district: San Pitch Mountains, Chicken Creek, Levan, Nephi, Salt Creek.
Kane County Cannonville; Glendale; Johnson Creek; Kanab Creek; Kimball Valley; Paria, 9 mi. south.
Millard County Fillmore; Kanosh.
Piute County Sevier Canyon.
San Juan County Gypsum Creek; Moab Valley; Monticello district; Paradox basin; San Juan River.
Sanpete County Gunnison; Mayfield; Twelve Mile Canyon.
Sevier County Glenwood; Sigurd.
Tooele County Ophir district: Ophir Hill area - Ophir Hill Consolidated, Ophir Coalition mines.
Wayne County Last Chance Gulch; Muddy River.

ANKERITE


Emery County San Rafael district: Temple Mountain.
Juab County Tintic district: Victoria mine.
Salt Lake County Little Cottonwood district: Clayton Peak stock contact zone.
Utah County Gano district: Gano mine.

ANNABERGITE


Iron County Escalante district: Escalante mine.

ANORTHITE


Millard County House Range: Notch Peak stock.
Salt Lake County Big Cottonwood district: Confidence, Maxfield mines.

ANORTHOCLASE


Tooele County Gold Hill district: Reaper mine.

ANTHOPYLLITE


Daggett County Red Creek Complex.

ANTHRAXOLITE (See GILSONITE)

ANTIGORITE


Sevier County Henry district: Trinity prospect.
Washington County Mineral Mountain: Emma mine.

ANTLERITE


Juab County Deseret Mountain district.
San Juan County White Canyon district: Happy Jack, Posey mines.
Utah County East Tintic district: Burgin mine.
APATITE

*Beaver County* Granite district: Miller mine; Rocky district: Old Hickory mine; San Francisco district.


*Millard County* Twin Peaks.

*Salt Lake County* Little Cottonwood stock.

*San Juan County* La Sal Mountains: Middle Mountain, Brumley Ridge.

*Sevier County* Henry district: Trinity prospect.

*Tooele County* Dugway district: Gold Hill district: Centennial and Enterprise, Copper Bloom, Doctor, Victory no. 1, Yellow Hammer mines; Granite Mountain district: Ophir district: Dry Canyon area; Ophir Hill area - Hidden Treasure, Ophir Hill Consolidated, Ophir Coalition mines.

*Utah County* Little Cottonwood stock.

APJOHNITE
A hydrated sulfate of aluminum and manganese, MnAl$_2$(SO$_4$)$_2$ 22 H$_2$O. Monoclinic. Occurs as masses and crusts, composed of fibrous or acicular crystals. H. 1.5. G. 1.8. Luster silky. Colorless to white, also tinted rose, pale green, yellow.

*Salt Lake County* Alum Point.

APOPHYLLITE
Hydrous calcium potassium fluosilicate, KCa$_4$Si$_8$O$_{20}$ (F.OH)-8H$_2$O. Tetragonal. Usually occurs as crystals. H. 4.5 -5. G.2,4. Cleavage perfect. Luster pearly, vitreous. Colorless, white, gray, may be shades of green, yellow, rose. Transparent to translucent.

*Salt Lake County* Bingham district: Bingham Copper pit.

*Tooele County* Rush Valley district: Honerine mine.

*Uintah County* Hells Hole Canyon: White River Canyon.

AQUAMARINE (See BERYL)

ARAGONITE

*Beaver County* Bradshaw district.

*Box Elder County* Great Salt Lake.

*Davis County* Great Salt Lake.

*Juab County* Tintic district: Iron Blossom mine.

*Millard County* Leamington district: Yellowstone mine.

*Salt Lake County* Great Salt Lake.

*Tooele County* Great Salt Lake; Mercur district; Rush Valley district: Honerine mine.

*Utah County* Lehi district: Pelican Point area - Canyon, Foothill and Hilltop, Pelican and Utah Valley veins.

ARDUNITE

*Juab County* Tintic district.

ARGENTITE

*Beaver County* Bradshaw district: Cave, Hecla, Nip and Tuck mines; San Francisco district: Horn Silver mine; Granite district: Beaver View mine; Indian Peak district; Lincoln district: Lincoln mine; Newton district: Sleep Rock mine.

*Box Elder County* Ashbrook district: Vipont mine.


*Juab County* Mt. Nebo district: Big Nebo, Blackett tunnel, Eva, Freddie Lode mines; Tintic district: Mammoth mine.

*Piute County* Gold Mountain district: Annie Laurie, Sevier mines; Marysvale district: Quicksilver mine; Mt. Baldy district: Pluto mine.

*Salt Lake County* Big Cottonwood district: Carbonate mine; Bingham district: Little Cottonwood district: Albion, Emma mines.

*Summit County* Park City district: Daly West mine.

*Tooele County* Ophir district: Dry Canyon area - Surprise mine; Ophir Hill area - Jim Fisk, Ophir Hill Consolidated, Ophir Coalition, Sacramento mines.

*Utah County* Alpine district: Alpine-Galena property; American Fork district: Miller mine; East Tintic district: Apex Standard, Burghin mine; Eureka Lily, Eureka Standard, Iron King, North Lily, Tintic Standard, Trixie mines; Provo district: Monarch mine; Silver Lake district: Milkmaid, Ontario mines.

*Washington County* Silver Reef district: California,
ARGENTOJAROSITE


Beaver County: Granite district; Big Pass group.
Tooele County: Ophir district; Lion Hill area - Buffalo mine, Chloride Point.
Utah County: East Tintic district; Burgin, Eureka Lily, Tintic Standard, Trixie mines.

ARGULITE

An asphalt. Occurs as an asphalt-saturated sandstone. Uintah County: Argyle Creek.

ARGYRODITE


Box Elder County: Ashbrook district; Vipont mine.

ARSENIC


Emery County: San Rafael district; Camp Bird No. 7, Fuenrol no. 2 mines.

ARSENIOSIDERITE


Juab County: Tintic district.
Tooele County: Gold Hill district; Gold Hill (Western Utah) mine.

ARSENOBISMITE

Hydrous bismuth arsenate, Bi₃AsO₄(OH)₂. Cubic. Chemically hydrated bismuth arsenate, of uncertain formula. Occurs as friable or ocherous microcrystalline masses. Color yellowish brown to yellowish green. G. 5.7.

Juab County: Tintic district; Mammoth mine.

ARSENOPYRITE


Box Elder County: Ashbrook district; Vipont mine; Park Valley district; Century, Susannah mines.
Garfield County: Circle Cliffs; Rocky Mountain mine.
Juab County: Tintic district; Swansea mine; West Tintic district; Scotia mine.
Salt Lake County: Bingham district; Eagle Bird lode.
Tooele County: Deep Creek Mountains; Bonanza, Cyclone, Leap Year, Midas, Midland, Monte del Rey mines; Gold Hill district; Bonanza, Boston, Cash Boy, Climax, Copper Queen-Midland Mining Company, Cyclone, Gold Hill (U. S.), Gold Hill Standard, Mascot, Minnehaha, Monte Del Rey, New Baltimore, Ozark, Silver and Gold Mining Company, Success, Unadine, and U. S. mines; Mercure district; Geyser-Marion, Golden State mines; Rush Valley district; Ben Harrison, Homellite mines.
Utah County: East Tintic district.

ASBESTOS (See SERPENTINE)

ASPHALT (See ASPHALTUM)

ASPHALTUM


Box Elder County: north shore of Great Salt Lake; Rozel Point.
Carbon County: Sunnyside.
Uintah County: Asphalt Ridge; Evacuation Creek; PR Springs; Whiterocks Canyon.
Utah County: Colton, Gilluly, Thistle Junction.
Wasatch County: Soldier Summit.
Wayne County: Capitol Wash; Grand Wash to Capitol Wash.

ATACAMITE

Basic chloride of copper, Cu₂(OH)₃Cl. Orthorhombic.

Juab County Tintic district.

AUGITE


Beaver County San Francisco district; Star district: Lady Bryan mine.

Grand County La Sal Mountains: North Mountain.

Iron County Paragonah; Iron Mountain.

Millard County Twin Peaks.

San Juan County La Sal Mountains district: Middle Mountain, Brumley Ridge.

Tooele County Dutch Mountain; Stansbury Mountains: North Willow Canyon.

AURICHALCITE


Beaver County Bradshaw district: Cave mine; Granite district: Big Pass group; Star district: Emerson mine.

Juab County Tintic district: Bullion Beck, Carissa Gemini, Iron Blossom, May Day, Uncle Sam, Yankee mines; West Tintic district: War Eagle claims.

Salt Lake County Big Cottonwood district: Carbonate mine.

Tooele County Ophir district: Dry Canyon area - Kear-sarge mine; Lion Hill area - Buffalo mine, Chloride Point; Ophir Hill area - Cliff, Hidden Treasure, Sacramento mines; Rush Valley district: Honerine mine; North Tintic district: Scraton mine.

Washington County Dry Canyon; Tatsagubet district: Apex (Dixie) mine.

AUSTUNITE


Beaver County Newton district: Indian Creek, Sniffer and Mystery claims; Pine Grove district: Daisy, Producer, Staats (Monarch) mines; Southern San Francisco Mountains: White Mountain, one mile east.

Emery County San Rafael district: Delta Mine, Wild Horse Canyon.

Garfield County Circle Cliffs: Stud Horse mine.

Tooele County Gold Hill district: Gold Hill (U.S.) mine.

AUTUNITE


Beaver County Newton district: Indian Creek, Sniffer and Mystery claims; Pine Grove district: Daisy, Producer, Staats (Monarch) mines; Southern San Francisco Mountains: White Mountain, one mile east.

Emery County San Rafael district: Calf Mesa, Dalton group, Delta mine, Dripping Springs, Lone Tree group, South Temple Wash, Wild Horse Canyon. Wild Horse claims.

Garfield County Circle Cliffs: Acme, Black Widow, Blue Goose, Horse Head, Rocky Mountain, Steam Boat, Stud Horse mines.

Grand County Pack Creek; Seven Mile Canyon; Tomp-sons district: Thom claim, Parco no. 23 mine.

Iron County Kanarraville.

Juab County Honeycomb Hills; Indian Creek.

Kane County Bulloch claims; Paria, 9 miles south.

Piute County Marysvale district: Buddy, Bullion Mon-ch, Copper Butte, East Slope no. 2, Freedom lease, Freedom nos. 1 and 2, Prospector nos. 1 and 3 mines.

San Juan County Monument Valley district: Oljeta, Skyline mines.

Sanpete County R.A.J. prospect.

Uintah County Jenson; Bonnie Bell claims; Snow claims.

Washington County Hurricane Cliffs; Santa Clara Silver Reef district: Buckeye, Duffin and Toquerville, East Reef mines; Virgin anticline.

AXINITE

Hydrous aluminum borosilicate with varying amounts of calcium, manganese, and ferrous iron, (Ca, Mn, Fe, Mg)_xAl_2BSi_4O_15(OH). Triclinic. Frequently in crystals and crystalline aggregates; also massive, lamellar to granular. H. 6.5-7. G. 3.3. Luster vitreous. Color clove-brown, violet, gray, yellow, green. Transparent to translucent.

Tooele County Gold Hill district.
AZURITE


Gulch; Miners Mountain district: Old Faithful, Wonder Copper no. 1 mines; Torrey: T. R. Lode no. 1 mine. Weber County Cold Water Canyon; Weber district: New Azurite claim.

**BALYDONITE**

Basic hydrous copper lead arsenate, \((\text{Pb, Cu})_3\text{As}_2\text{O}_9 \cdot \text{(Pb,Cu) (OH)}_2\cdot\text{H}_2\text{O}\). Probably monoclinic. In mammillary concretions, fibrous, drusy. H. 4.5. G. 4.4. Color green, yellow green. Luster resinous.

**Summit County** Park City district: Daly-Judge mine.

**Utah County** East Tintic district.

**BARITE**


**Beaver County** Antelope district; Beaver Lake district; Granite district: Big Pass, Contact mines; McGarry district; Prues district: Blackbird, Cactus, Gold Reef mines; San Francisco district: Horn Silver mine.

**Box Elder County** Lucin district: Copper Mountain, Tri-State Minerals mines; Rosebud district.

**Emery County** Barium Incorporated mine.

**Grand County** Courthouse Wash; Little Grand district: Colorado Fuel and Iron Company mine; Needles; Tenmile Wash; Ryan Creek Scheelite prospect.

**Iron County** Escalante district: Escalante mine, Iron Springs district: Granite Mountain, Iron Mountain.

**Juab County** Deseret district: Rockwell shaft; Fish Springs district: Garnick mine; Mount Nebo district: Eva, Freddie mines; Tintic district: Boss Tweed, Carissa, Centennial Eureka, Eureka Hill, Gold Chain, Grand Central, Iron Blossom, Mammoth, Ophohonga, Swansea mines; West Tintic district: 88, 1903, Pyramid, Scotia, War Eagle mines.

**Kane County** Kitchen Corral Canyon.

**Morgan County** Argenta district: Carbonate Hill, Carbonate Gem mines.

**Price County** Gold Mountain district; Marysville district: Bullion Monarch mine; Mount Baldy district: Lucky Boy mine; Ohio district: Buly Boy and Webster mines.

**Rich County** Swan Creek district: Victoria prospect.

**Salt Lake County** Big Cottonwood district; Bingham district: Eagle Bird Lode, Lucky Boy, Queen mines; Little Cottonwood district: Albion, Flagstaff mines.

**San Juan County** White Canyon district: Happy Jack mine.

**Summit County** Park City district.

**Tooele County** Bluebell district: Morgan mine; Deep Creek Mountains: Probert mine; Dugway district: Buckhorn, Confidence, Four Metals, Francis, Great Eastern, Juno, Kellys Hole, Lauris, Nautilus, Pride of the West mines; Gold Hill district: Christmas Mining Company, Garrison Monster, Reaper mines; Ibapah Mountains; Mercur district: Ophir district: Dry canyon area; Lion Hill area - Buffalo, Chloride Point, Douglas, Lion, Zella mines; Ophir Hill area; Silver Island district: Carrie Mack Property; Wild Cat Mountain: Silver Queen mine.

**Utah County** American Fork district: Bog, Dutchman, Pacific, Yankee mines; East Tintic district: Burgin, Eureka Lily, Eureka Standard, Iron King, Zuma mines; Tintic Standard mines; Payson district: Syndicate mine; Santaquin district: Union Chief mine; Silver Lake district: Milkmaid, Ontario mines.

**Wasatch County** Strawberry area, along thrust fault. Weber County Cold Water Canyon.

**BARNESITE**

Hydrous sodium vanadate, \(\text{Na}_3\text{V}_6\text{O}_{16}\cdot 3\text{H}_2\text{O}\). Monoclinic. Consists of microscopic bladed to fibrous crystals, in loose aggregates or in radiating cluster. Color dark red. Luster adamantine. Grains soft and friable. G. 3.2. Occurs in small cavities, fractures, and fillings in sandstone.

**Grand County** Thompsons district: Cactus Rat mine.

**BARYTOCALCITE**


**Uintah County** Sun Oil Company South Ouray well.

**BASALUMINITE**

Hydrous aluminum sulphate, \(\text{Al}_4(\text{SO}_4)_4 \cdot (\text{OH})_{10} \cdot 5\text{H}_2\text{O}\). Hexagonal. Massive, microcrystalline. Compact to powdery. G. 2.12. Fracture conchoidal when compact. Color white, often shaded yellow, orange, or brown, Luster dull.

**Emery County** Temple Mountain: Fuemrol No. 2 mine.

**BASSANITE**

Hydrous calcium sulfate, \(2\text{CaSO}_4 \cdot \text{H}_2\text{O}\). Monoclinic. Pseudomorphs after gypsum, composed of microscopic needles in parallel arrangement. Color white. G. 2.7.
BASSETITE

Hydrated iron uranium phosphate, Fe(PO₄)₂(H₂O)₂·8H₂O. Monoclinic. Occurs as plates of flattened crystals. Cleavage perfect. H. 2.5-3.4. Luster vitreous. Color olive green, also yellow, brown. Transparent. Not fluorescent.

*Emery County* Green River district: Denise no. 1 mine; San Rafael district: Fuenrol no. 2 mine.

BAYLEYITE

Hydrated magnesium uranium carbonate, Mg₂(UO₂)(CO₃)₂·18H₂O. Monoclinic. Occurs as minute, short prismatic crystals, also in acicular and divergent groups. H. 2-2.5. G. 2. Color sulfur yellow. Luster vitreous.

*San Juan County* Big Indian district: Mi Vida mine; Elk Ridge; Coral claim; White Canyon district: Hideout mine.

BEAVERITE

Basic sulfate of lead, copper, ferric iron, and aluminum, Pb(Cu,Fe,Al)₃(PO₄)₃(OH)₆. Hexagonal. Friable and earthy masses. G. 4.4. Color canary yellow.

* Beaver County* Granite district: Miller, Scheelite group mines.

BECQUERELITE

Hydrated calcium uraninate, Ca(UO₂)₂·11H₂O. Orthorhombic. Crystals usually long prismatic, often vertically striated. Also coarse columnar or granular to compact. H. 7.5-8. G. 2.7. Cleavage poor. Fracture conchoidal to uneven. Brittle. Luster vitreous. Color emerald green, pale green to blue, yellow, white. Transparent to translucent. Aquamarine variety found in Ibapah Mountains; bixbite, raspberry red color, found on Topaz Mountain; morganite, pink to rose red, variety found on west side of Spor Mountain.

BERKELITE


*Tooele County* Gold Hill district: Copper Bloom mine. *Utah County* Clay Canyon; East Tintic district.

BETELITE


BERTRANDITE


*Juab County* Honeycomb Hills; Thomas Range: Spor Mountain - Claybank, Blue Chalk, Hogshack, Northend, Rainbow. Roadside claims.

*Tooele County* Gold Hill district: Rodenhouse Wash.

Beryl

Beryllium aluminum silicate, Be₃Al₂Si₆O₁₈. Hexagonal. Crystals usually long prismatic, often vertically striated. Also coarse columnar or granular to compact. H. 7.5-8. G. 2.7. Cleavage poor. Fracture conchoidal to uneven. Brittle. Luster vitreous. Color emerald green, pale green to blue, yellow, white. Transparent to translucent. Aquamarine variety found in Ibapah Mountains; bixbite, raspberry red color, found on Topaz Mountain; morganite, pink to rose red, variety found on west side of Spor Mountain.

* Beaver County* Granite district: Miller, Scheelite group mines.

BETANITELINE


*Emery County* San Rafael district: Delta mine, Green Vein Mesa, Consolidated, Lucky Strike, Lucky Strike no. 2 mines.

BERTRANDITE


*Juab County* Honeycomb Hills; Thomas Range: Spor Mountain - Claybank, Blue Chalk, Hogshack, Northend, Rainbow. Roadside claims.

*Tooele County* Gold Hill district: Rodenhouse Wash.

BETANITELINE

BETA-URANOTILE


BEUDANTITE


BICKERITE (See AUSTINITE)

BIEBERITE


BILLINGSLIEYITE


BIRNESSITE

A hydrous manganese oxide, perhaps (Na,Ca)Mn₇O₁₄·3H₂O. Hexagonal. Earthy, some grains show
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Utah County East Tintic district: Burgin mine.
Washington County Enterprise.

BISCHOFITE

Tooele County Salduro; Wendover.

BISMITE

Juab County Tintic district: Boss Tweed, Eagle, Blue Bell mines.
Salt Lake County Little Cottonwood district: South Hecla mine.
Tooele County Gold Hill district: Wilson Consolidated mine.
Utah County East Tintic district: Eureka Lily mine.

BISMOCLITE

Juab County Tintic district: Eagle, Blue Bell mines.

BISMUTH

Juab County Tintic district: Boss Tweed, Emerald mines.
Salt Lake County Bingham district; Little Cottonwood district: South Hecla mine.
Tooele County Gold Hill district: Copper Bloom, Doctor, Lucy L., Wilson Consolidated mines; Ophir district: Ophir Hill area - Ophir Hill Consolidated, Ophir Coalition mines.

BISMUTHIAN BINDHEIMITE

Bismuth antimonate of lead, Pb\(_2\)(Sb,Bi)\(_2\)O\(_6\) (O,OH). Isometric. Occurs as cryptocrystalline masses, earthy to dense, or as incrustations. H. 4-4.5. G. 4.6-5.6. Luster resinous, dull, or earthy. Color clear to pale yellow to deep yellow-brown.
Juab County Tintic district: Mammoth mine.

BISMUTHINITE

Beaver County Bismuth mine; Star district: Commonwealth, Kemple, Progressive, St. Mary's mines.
Box Elder County Newfoundland district.
Juab County Tintic district: Mammoth mine: West Tintic district.
Pinne County Ohio district: Tunnel Extension No. 2 mine.
Salt Lake County Little Cottonwood district: South Hecla mine.
Tooele County Blue Bell district: Bogan mine; Gold Hill district: Copper Bloom, Lucy L., Wilson Consolidated mines; Overland Canyon.
Utah County East Tintic district: Eureka Lily, North Lily, Tintic Standard mines.

BISMUTITE

Beaver County Star district: Commonwealth, Kemple, Progressive, St. Mary's mines.
Box Elder County Lucin district: Empire mine.
Juab County Detroit district: Charm, Copperhead, E. P. H., Ibex mines; Tintic district: Boss Tweed, Carissa, Eagle and Blue Bell, Victoria mines.
Millard County Detroit district: Almond, Blue Bell, Major Drum mines.
Salt Lake County Bingham district.
Tooele County Gold Hill district: Copper Bloom, Lucy L., Wilson Consolidated mines.

BIXBITE (See BERYL)
BIXBYITE


Juab County Dugway Range; Thomas Range; Topaz Mountain.

BLOEDITE


Box Elder County Great Salt Lake shores.
Davis County Great Salt Lake shores.
Salt Lake County Great Salt Lake shores.
Tooele County Great Salt Lake shores.

BOEHMITE


Utah County East Tintic district.

BOG ORE (See GOETHITE)

BOLTWOODITE

Hydrous potassium uranium silicate, K₂(UO₂)₂(SiO₃)₂·5H₂O. Orthorhombic; may be monoclinic. Occurs as radiating acicular to fibrous aggregates. H. 3.5. G. 3.6. Cleavage good. Luster pearly to silky. Color yellow. Fluoresces dull green. Encrusts primary uraninite.

Emery County San Rafael district: Delta, Pay Day mines.
Grand County Seven Mile Canyon.
San Juan County Blue Jay mine; Julia claims; Pete no. 6 claim; Red Canyon district: Jerry group; White Canyon district: Happy Jack mine.

BOOTHITE


San Juan County White Canyon district: W. N. mine.

BORICKITE


Juab County Tintic district: Ajax, Mammoth mines.

BORNITE


Beaver County Beaver Lake district; Granite district: Contact group; Lincoln district: Creole mine; Rocky district: Bawana, Maria, Old Hickory mines.
Box Elder County Crater Island district: Copper Blossom mine; Newfoundland district: Copper Ridge; Promontory district: Lakeview mining properties.
Duggeit County Red Creek: Yellow Canary uranium deposits.
Davis County Farmington district: Parrish Canyon.
Emery County San Rafael district: Maybe mine.
Garfield County Henry Mountains.
Grand County Hoosier mine; La Sal district: Bornite, McCoy mines; Seven Mile Canyon: Shinarump nos. 1-3 claims.

Juab County Deseret Mountain district.
Salt Lake County Big Cottonwood district: Big Cottonwood, Columbus-Rexall, Mountain Lake mines; Bingham district: Bingham Copper pit, Carr Fork, Copper Center tunnel, Galena, Old Jordan, Highland Boy, Yampa mines; Little Cottonwood district: Alta Stock contact zone, South Hecla mine.
San Juan County Elk Ridge, Payday mine; La Sal Mountains; Monticello district: Copper Queen mine; White Canyon district: Blue Lizard, Happy Jack, Hideout, White Canyon No. 1, W. N. mines.
Summit County Park City district: Daly, Ontario mines.
Tooele County Gold Hill district: Alvarado, Cane Springs, Copperopolis, Doctor, Frankie, Ida Lull, Mida mines.
Utah County Browns Park area; Carbonate district: Dyer mine.
Utah County East Tintic district; Eureka Lily, Eureka Standard, Trixie mines; Silver Lake district: Milkmaid mine.
Wasatch County Blue Ledge district: Mayflower mine.
Washington County Silver Reef district.
Weber County Sierra Madre district: Eldorado property.
BOULANGERITE


*Summit County* Park City district: Park City Consolidated mine.
*Tooele County* Bingham district: May Flower mine; Gold Hill district: Rube mine.

BOURNONITE


*Salt Lake County* Bingham district; Little Cottonwood district: Albion mine.
*Summit County* Park City district: Daly Judge, Daly West, Silver King, Woodside mines.

BRAITSCHITE

Hydrous calcium rare-earth borate. 7(Ca$_{2-}$,Na$_{2-}$)O·RE$_2$O$_3$·11B$_2$O$_3$·7H$_2$O. Hexagonal. Very small prismatic crystals. Occurs in nodules in anhydrite beds. G 2.8. Colorless to white.

*Grand County* Cane Creek: Texas Gulf Potash mine.

BRAUNITE


*Juab County* San Pitch Mountains: Black Jack (Kendall-Duvall) claims.

BRAVOITE


*Emery County* San Rafael district: Delta mine.

BROCHANTITE


*Beaver County* San Francisco district: Horn Silver mine. *Daggett County* Red Creek district: Yellow Canary uranium deposit.
*Emery County* San Rafael district: Delta mine. *Juab County* Deseret district: Silver King, Woodside mines.
*Tooele County* Ophir district: Dry Canyon area.
*Utah County* East Tintic district: Burgin mine.
*Wayne County* Chimney Rock to Tantlus Flat.

BROCKITE


*Sevier County* Monroe Canyon in a vein.

BRONZITE (See ENSTATITE)

BROOKITE


*Emery County* Emery: Phillips Huntington no. 1 well.

BRUCITE


*Beaver County* Beaver Lake district.
*Salt Lake County* Big Cottonwood district: Big Cottonwood, Mountain Lake mines; Little Cottonwood district: Alta and Clayton Peak stocks along contact.
Utah County Silver Lake district: Deer, Silver Creeks.
Washington County Mineral Mountain: Emma, Gregerson mines.

BURBANKITE

Rare earth carbonate, (Na, Ca, Sr, Ba, Ce)₂(CO₃)₅. Hexagonal. Color grayish yellow. H. 3.5, G. 3.5. Cleavage good. Effervesces in cold HC.

Duchesne County Green River Formation.
Uintah County Sun Oil Company South Ouray well, Green River Formation.

BUSHMANITE (See PICKERINGITE)

CALAMINE (See HEMIMORPHITE)

CALAVERITE


Salt Lake County Bingham district: Highland Boy, Yampa mines.
Summit County Park City district: Park City Consolidated mine.
Tooele County Gold Hill district: Lucy L. mine.
Utah County East Tintic district: Eureka Lily, Eureka Standard mines.

CALCIOVOLBORTHITE


Grand County Moab Valley; Richardson district.
San Juan County Monument Valley district: Whirlwind mine.

CALCITE


Beaver County Antelope district; Beaver Lake district: Rat Ridge, Skylark mines; Blue Mountains: Susie Q claims; Granite district: Big Pass, Rattler groups; Indian Peak district: Blue Bell, Cougar Spar, Dugout, JB, Noonday, Lost Sheep, Utah mines; Lincoln district: creole mine; McCarry district: Newton district: Sheep Rock mine; Pine Grove district: Monarch mine; San Francisco district: Horn Silver mine; Star district: Commonwealth, Kemple, Progressive, St. Mary's mines.
Box Elder County Box Elder district; Crater Island district: Copper Blossom mine.
Carbon County near Price.
Garfield County Mammoth Creek.
Grand County Agate Switch; Cisco; Courthouse Wash; Miners Basin district: Dewey, High Ore, McCormick mines; Little Grand district: Colorado Fuel and Iron Company mines, Needles, Tennmile Wash.
Juab County Mt. Nebo district: Eva, Highland mines; Thomas Range: Autunite no. 8, Claybank, Blue Chalk, Hogshack, Northend, Rainbow, Roadside, Eagle Rock, Harrisite, Overnight, Thursday mines; Topaz Mountain: Tintic district: Carissa, Emerald, Iron Blossom mines; San Pitch Mountains: Orme property; West Tintic district: Tintic Western, War Eagle claims.
Kane County Kitchen Corral Canyon; Orderville.
Piute County Marysvale district.
Rich County Bear River Range: Lakeview claims.
Salt Lake County Bingham district: Camp Williams; Evans lime quarry.
San Juan County Monticello district: Duckett mine.
Sevier County Henry district: Trinity prospect.
Summit County Park City district.
Tooele County Cedar Mountains: Dugway district: Boston, Confidence mines, Kellys Hole; Gold Hill district, Alvarado, Bonnemort, Rea, Rube mines; Johnson Pass; Mercur district: Geyser Marion, Golden Gate, Mercur mines; Ophir district: Dry Canyon area; Lion Hill area - Lion, Douglas, Zella mines; Ophir Hill area - Ophir Coalition mine; Stansbury Mountains. Grantsville.
Uintah County Sun Oil Company South Ouray well. Utah County. East Tintic district; Lehi district: Pelican Point area - Canyon, Foothill and Hilltop, Pelican and Utah Valley veins, Philppine, Potter claims; Pfeiffer Canyon area; Provo district: Monarch mine; Santaquin district: Black Balsam, Blue Eagle, Union Chief mines;
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Wells Canyon.
Wasatch County Bonanza Flat.
Washington County Bull Valley district; Silver Reef district.
Weber County Sierra Madre district: Eldorado property.

CALEDONITE

Salt Lake County Little Cottonwood district: Oxford, Geneva mines.

CARBONATE APATITE

Daggett County Uintah Mountains.
Duchesne County Uintah Mountains.
Uintah County Brush Creek: Frandson Canyon; Little Brush Creek; Rock Creek.
Wasatch County Uinta Mountains.

CARBON DIOXIDE

Carbon County Farnham Dome; Gordon Creek.
Grand County Harley Dome.

CARMINEITE

Tooele County Gold Hill district: Gold Hill (U. S.) mine.

CARNALLITE
Hydrous potassium magnesium chloride, \( \text{KMgCl}_3\cdot6\text{H}_2\text{O} \). Orthorhombic. Usually massive, granular. H. 2.5. G.1.6. No distinct cleavage. Luster greasy. Colorless to white, often reddish. Transparent to translucent. Taste bitter.

Grand County Cane Creek: Texas Gulf Potash mine; Crescent Junction; Paradox basin; Salt Valley; Seven Mile Anticline.
San Juan County Moab Valley, Paradox Valley district.
Tooele County Salduro; Wendover.

CARNELIAN
(See CRYPTOCRYSTALLINE QUARTZ)

CARNOTITE
Hydrous potassium uranium vanadate, \( \text{K}_2(\text{UO}_2)_2(\text{VO}_4)_2\cdot3\text{H}_2\text{O} \). Orthorhombic or monoclinic? Rarely found in crystals. Usually occurs as powder or loosely coherent aggregates, also disseminated. G. 5. Cleavage perfect basal. Luster dull or earthy. Color bright yellow to greenish-yellow.

Beaver County Southern San Francisco Mountains: White Mountain, one mile east.
Carbon County Coal Creek.
Duggett County Red Creek: Yellow Canary uranium deposit.
Emery County Cedar Mountain district; Green River district: Yellow Queen mine; San Rafael district: Blue Bird, Calyx, Camp Bird Nos 7, 12, and 13, Delta, Flat Top Mesa, Migliaccio, North Mesa Nos. 1, 2 and 5, Temple Rock. South Temple Wash, Vagabond, West Little Horse Mesa, Wild Horse Canyon mines.

Grand County Beaver Mesa: Corvusite nos. 1-3 mines; La Sal district: Jack claims; Miners Basin district: West Slope mine; Mill Creek; Moab Valley; Pack Creek; Polar Mesa district: Elva M. and Adjoining, Elva M. and Imp, Polar nos. 2-3, Rim Rock and Rim Rock no. 2 claims; Richardson district; Seger Station; Seven Mile Canyon: Shinarump nos. 1-3 claims; Thompsons area; Thompsons district: Cactus Rat, Flat Top no. 1, Red Vanadium groups; Yellow Cat district: Uvanco mine.

Iron County Cedar Canyon.
Juab County Thomas Range: Bell Hill, Blowout, Dell no. 5, Eagle Rock, Floride, Florine Queen, Florine Queen no. 4, Harriste, Hilltop, Lost Sheep, Lucky Louie mines; Topaz Mountain.
Kane County Bulloc group; south of Paria.
San Juan County

Abe Day's vanadium claim; Big Indian district: Cal Uranium, Mi Vida, Radon, Rattlesnake mines; Browns Hole area: Bull Canyon; Cane Springs Pass: Bridger Jack Flat; Chess Ridge; Cottonwood Canyon district: Basin, Big Hole, Birthday Shale, Blue Bird, East Bank, Found no. 2, Hangover nos. 1-2, Little Peter, Lucky No. 3, Marjorie Ann, Maud, Morning Star, New Yellow Spot, Summer, Too High, Uranium Girl, Valley View, Vista Grande, Wedge, Yellow Bird, Yip Yip mines; Lisbon Valley: Climax nos. 1 - 2 claims; Montezuma Canyon: Bradford No. 5, Cottonwood, Dixie No. 1, Last Chance No. 1, Lucky Boy, Rim Rock, Rock, Slum, Strawberry, Titus No. 3, Verdi, West Cliff House No. 8 mines; Monticello district: Navajo Reservation; Paradox Valley district: Grey Dawn, Vanadium Queen mines; Red Canyon district: Spanish Valley Anticline; White Canyon district: Four Aces, Happy Jack, Hideout, White Canyon no. 1, White Fawn, Yellow Circle mines.

Utah County

Ashley Creek.

Washington County

Santa Clara district; Silver Reef district: Buckeye, Butte Reef, Doyle Shaft, East Reef mines.

Wayne County

Capitol Reef Monument; Coleman Canyon to Oak Creek; Fruitia: Oyster mine; Hanksville: Henry Mountains; Mt. Ellen; Muddy River; Naton Bench; Poison Springs; Rabbit Valley: Old Dixon prospect; Upheaval Dome; Waterpocket Fold.

CARPHOSIDERITE

Hydrous basic sulfate of ferric iron, \((\text{H}_2\text{O})\text{Fe}_3(\text{SO}_4)_3\) \((\text{OH})_3\). Hexagonal. Earthy or scaly crusts and aggregates, reniform. H. 4 - 4.5. G. 2.4 - 2.9. Cleavage doubtful. Luster resinous to dull, color golden yellow, dark straw-yellow. A goossan constituent.

Juab County: Tintic district: Carissa, Eureka Hill mines.

Tooele County: Ophir district: Lion Hill area.

CASSITERITE


Emery County: Emery; Phillips Huntington no. 1 well.

Piute County: New Yellow Spot, Summit County: East Tintic district.

CELESTITE

Strontium sulfate, \(\text{SrSO}_4\). Orthorhombic. Crystals tabular or prismatic. Also fibrous, radiated, globular or granular. H. 3.5 - 3.9. Cleavage good. Luster vitreous to pearly. Colorless to pale blue. Transparent to translucent.

Emery County: 50 miles S. of town of Green River.

Grand County: Little Grand district: Salt Wash group.

San Juan County: Big Indian district: Radon mine.

Sevier County: Salina Creek district: Lead Hill mine.

Washington County: Santa Clara district: Black Beauty no. 1 claim.

CERARGYRITE

Silver chloride, \(\text{AgCl}\). Isometric. Crystals usually cubic but rare. Usually massive resembling wax or horn, often in crusts. H. 2-3. G. 5.5. No cleavage. Fracture uneven. Highly sectile and ductile. Luster resinous to horn-like. Colorless to slightly gray when fresh, readily darkens on exposure to light. Transparent to translucent.

Box Elder County: Sheep Rock mine: San Francisco district: Horn Silver mine; Star district.

Box Elder County: Ashbrook district: Vipont mine.

Iron County: Escalante district: Escalante mine; Gold Springs district: Homestake mine; Stateline district: Creole, Gold Dome, Johnny, Oter, Phelps, Utah Spur mines.

Juab County: Detroit district: Charm, Copperhead, E. H., Ibex mines; Fish Springs district: Carnation, Emma, Galena, Utah mines; Tintic district: Bullion Beck, Centennial Eureka, Chief Consolidated, Eagle and Blue Bell, Gemini, Godiva, Grand Central, Iron, Mammoth mines.

Platte County: Gold Mountain district: Annie Laurie, Sevier mines; Mt. Baldy district: Pluto mine.

Salt Lake County: Bingham district: Dixon, Winnamuck mines.

Summit County: Park City district: Daly, Ontario, Scottish Chief mines.

Tooele County: Dugway district: Buckhorn, Four mine.

Uintah County Brush Creek district: Little Alta mine. Utah County Santequin district: Union Chief mine. Washington County Silver Reef district: California, Leeds, Requa, Savage, Tecumseh Hill mines.

CERUSSITE


Beaver County: Bradshaw district: Cave mine; Granite district: Beaver View, Big Pass mines; Indian Peak district: Lincoln district: Creole mine; Pine Grove district; Pruss district: Gold Reef mine; San Francisco district: Horn Silver mine; Star district: Cedar-Talisman, Emerson, Gold Crown, Hoosier Boy, Commonwealth, Kemple, Maud S., Progressive, St. Mary's, Dotson, Estelle, Mowitza, Vicksburg, Harrington-Hickory, Rebel, Sundown. White Rock, Hub, Mammoth, Moscow. Red Warrior, Wild Bill mines, Woodhouse mines.

Box Elder County: Ashbrook district: Vipont mine; Box Elder district: Lucin district: Cunepah Tunnel, Copper Mountain, Judson, Tecoma Hill mines; Newfoundland district: Promontory district: Big Pine, Lakeview, Sunshine Mining Properties; Rosebud district. Cache County: Hyrum area - Tip Top claim; La Plata area - Yellow Jacket claim; Paradise district: Smithfield area.


Wasatch County
Blue Ledge district: Glencoe, McHenry, Valeo mines; Elkhorn district: Crawford, Nelson and Queen mines; Snake Creek district: Revelator, West Quincy mines.

Washington County
Tutsagubet district: Apex, Paymaster mines.

Weber County
Sierra Madre district: Eldorado property.

CERVANTITE

Salt Lake County
Little Cottonwood district: Emma, Little Emma mines.

CHABAZITE

Piute County
Marysvale district: Silica Hills.

Salt Lake County
Little Cottonwood district: Emma, Little Emma mines.

Wasatch County
Clayton Peak.

CHALCEDONY
(See CRYPTOCRYSTALLINE QUARTZ)

CHALCANTHITE

Beaver County
San Francisco district: Horn Silver mine. Emery County
San Rafael district: Calf Mesa, Dexter group.

Salt Lake County
Bingham district: Bingham Copper pit, Broad Gauge, Galena, Old Jordan, Highland Boy, Yampa mines.

San Juan County
Elk Ridge; Red Canyon district: Markey no. 3 mine; White Canyon district: Fry No. 4 mine, Happy Jack, Jomac, W. N. mines.

Sevier County
Henry district: Trinity prospect.

Summit County
Park City district.

Tooele County
Deep Creek Mountains: Cyclone, Leap Year mines; Dogway district: Bertha, Four Metals, Juno, Metal States mines; Gold Hill district: Alvarado, Cyclone mines; Ophir district: Ophir Hill area - Ophir Hill Consolidated, Ophir Coalition mines.

Utah County
East Tintic district.

Wayne County
Chimney Rock to Tantlus Flat; Fruita: Oyler mine.

CHALCEDONY
(See CRYPTOCRYSTALLINE QUARTZ)

CHALCOCITE

Beaver County
Beaver Lake district: Beaver-Harrison, OK mines; San Francisco district: Horn Silver mine.

Box Elder County
Ashbrook district: Vipont mine.

Daggett County
Red Creek: Yellow Canary uranium deposit.

Davis County
Farmington district: Parrish Canyon.

Emery County
San Rafael district: Blue Bird, Dexter Group mines.

Grand County
Seven Mile Canyon.

Juab County
Tintic district: Centennial Eureka, Grand Central mines.

Millard County
Church Hills: Stevens prospect.

Piute County
Ohio district: Tunnel Extension No. 2 mine.

Salt Lake County

San Juan County
Big Indian district: Big Indian Copper, Mi Vida mines; Elk Ridge; La Sal Mountains; Monticello district: Copper Queen, Tuffy Copper mines; Monument Valley district: Whirlwind mine; Paradox Valley district: Grey Dawn mine; Red Canyon district; White Canyon district: Happy Jack, Hideout, Jomac, Posey, W. N. mines.

Sevier County
Salina district: Bull, Lead Hill mines. Summit County
Park City district: Daly, Mayflower,
Minerals and Mineral Localities of Utah, Kenneth C. Bullock

Ontario mines.

Tooele County Deep Creek Mountains: Devils Pit. Eagles Nest, Oro del Rey mines. Dogway district: Bertha mine; Gold Hill district: Alvarado, Bonneamort, Cane Springs, Centennial and Enterprise, Copper Bloom, Copperopolis, Gold Hill (U. S.), Silver King, Victory no. 1 mines. Ophir district: Ophir Hill area - Ophir Hill Consolidated, Ophir Coalition mines.

Utah County Browns Park area: Carbonate district: Dyer mine; little Split Mountain; Uteland Knoll district: Ouray.

Utah County East Tintic district: Eureka Lily, Eureka Standard, Trixie mines.

Washington County Silver Reef district: Barbee and Walker, Cobb, Duffin and Toquerville, Emily Jane, Last Chance, Thompson, Tecumseh Hill mines.

CIALCOPHYLLITE


Utah County East Tintic district: Burgin mine.

CHALCOPHANITE

Hydrous basic sulfate-arsenate of copper and aluminum, Cu$_{15}$Al$_2$(AsO$_4$)$_3$ (SO$_4$)$_8$ (OH)$_{27}$·33H$_2$O. Hexagonal. Tabular six-sided crystals. Also foliated masses, and rosette aggregates; H. 2. G. 2. 6. Cleavage basal. Luster vitreous, pearly. Color emerald green or grass - green. Streak paler than the color. Transparent to translucent.

Juab County Tintic district: Ajax, Mammoth mines.

CIALCOPYRITE


Bear River County Beaver Lake district: Beaver-Harrison, OK, Skylark mines; Bradshaw district: Cave, Hecla, Nip and Tuck mines; Granite district: Contact group; Lincoln district: Creole, Lincoln mines; Pruess district: Blackbird, Cactus mines, Cactus Gulch; Rocky district: Bawana, Maria, Old Hickory mines; San Francisco district: Beaver Carbonate, Cupric, Horn Silver, Imperial, Michigan, Washington mines; Star district: Commonwealth, Harrington Hickory. Hub, Kemple, Lady Bryan, Maud S., Moscow, Progressive, Rebel, Red Warrior, St. Mary’s, Vicksburg, White Rock, Wild Bill mines.

Box Elder County Ashbrook district: Vipont mine; Crater Island district: Copper Blossom mine; Lucin district: Tecoma Hill mines; Newfoundland district: Copper Ridge; Park Valley district: Century, Susanmah mines; Promontory district: Lakeview properties; Rosebud district: Red Buttes; Willard district: Overland claim.

Daggett County Red Creek: Yellow Canary uranium deposit.

Davis County Antelope Island; Farmington district: Morning Star group; Parrish Canyon.

Emery County San Rafael district: Dexter group, Lucky Strike mine.

Garfield County Circle Cliffs: Rocky Mountain, Stud Horse mines; Henry Mountains: Bromide, Oro mines.

Grand County La Sal district: McCoy mine; Miners Basin district: Dewey, High Ore, Moab no. 1, Skylark mines; Seven Mile Canyon, Shinarump nos. 1-3 claims.

Juab County Deseret district: Rockwell shaft; Detroit district: Charm, Copperhead, E. P. H., Ibex mines; Fish Springs district: Carnation, Emma, Galena. Utah mines; Thomas Range: Bell Hill mine; Tintic district: Centennial Eureka, Grand Central mines; West Tintic district: Lockheed Iron, 1903, Scotia, Tintic Western, War Eagle mines.

Millard County Detroit district: Almond, Blue Bell, Major Drum mines; Saw Back district.

Morgan County Morgan district: Morgan Crescent mine.

Piute County Mt. Baldy district: Clyde mine; Ohio district: Bully Boy and Webster, Cascade, Copper Belt, Iris, Shamrock mines, Tunnel Extension No. 2, Shamrock mines.

Salt Lake County Big Cottonwood district: Columbus, Rexall, Big Cottonwood, Howell-Baby McKe, Reed and Benson, Woodlawn mines, Kentucky-Utah, Luhu, Mountain Lake mines; Bingham district: Bingham Copper Pit, Boston Consolidated, Brooklyn, Burning Moscow, Butterfield, Colorado, Commercial, Conger, Copper Center Tunnel, Dalton and Lark, Dixon, Fortune, Frisco, Galena, Highland Boy, Last Chance, Nast, Old Jordan, Old Telegraph, Queen, Silver Shield, U. S. and Lark, Winnamuck, York, Yosemite mines; Little Cottonwood district: Albion, Alta Consolidated, Columbus-Rexall, Dwyer, Native Copper, Oxford and Geneva, South Hecla, Superior mines.

San Juan County Big Indian district: Big Indian Copper mine: Elk Ridge; King Edward, Notch nos. 5 and 6, Oakie, Payday, Sandy no. 3 mines; Monticello district: Blue Bird, Danish Girl, Dream, Gold Queen, Copper Queen mines; Paradox Valley district: Grey Dawn mine; Red Canyon district: Jerry group; San Juan River, White Canyon district: Blue Lizard, Fry no. 4, Happy Jack, Hideout, Jomac. White Canyon no. 1, W. N.
mines.

Sevier County Henry district: Trinity prospect. Salina Creek district: Ball mine.

Summit County Park City district: Daly, J.A.C. Tunnel, Kearns-Keith, Mayflower mine, Ontario, Scottish Chief, Silver King, Wabash, Woodside mines.

Tooele County Deep Creek Mountains: Cyclone, Devils Pit, Eagles Nest, Laura, Leap Year, Midas, Monte de Rey, Monocroco, Oro del Rey mines; Dugway district: Bertha, Kellys Hole, New Park, Surplus mines; East Erickson district: Copper Jack, Flying Dutchman, Hard-to-Beat, Sheeprock Canyons, Silver King, Silver Shield mines; Erickson district: Highland Lassie no. 1, Last Hope no. 3, Silver Reef mines; Gold Hill district: Alvarado, Bonnemort, Cane Springs, Calaveras, Centennial and Enterprise, Copper Bloom, Copperopolis, Copper Queen-Midland Mining Company, Cyclone, Doctor, Frankie, Gold Hill (U. S.), Lucy L., Ida Lull, Reaper, Rube, U. S., Victory no. 1, Yellow Hammer mines; Granite Mountain district: Blue Bell, Cannon Tank Canyon, Desert, El Dorado, Mountain Queen mines; Grantsville district: Mercut district: Mineral Hill mine; Ophir district: Dry Canyon area - Kearsarge, Mono, Surprise mines; Lion Hill area - Buffalo mine; Ophir Hill area - Cliff, Ophir Hill Consolidated, Ophir Coalition, Sacramento mines; Rush Valley district: Ben Harrison, Calument, Galena King, Honerine, Muerbrook, Salvation-Hercules, Tip Top mines; Wild Cat Mountains: Silver Queen mine; Yellow Springs district.

Utah County American Fork district: Dutchman, Mary Ellena and Live Yankee, Yankee mines; East Tintic district: Eureka Lily, Tintic Standard mines; San Antonio district: Black Balsam, Copper Bullion, Sally Ann, Santaquin Central mines; Silver Lake district: Milkmaid, Ontario mines.

Wasatch County Blue Ledge district: Mayflower mine. Washington County Silver Reef district. Wayne County Fruita: Oyster mine; Miners Mountain district.

Weber County Fremont Island district: Sierra Madre district: Eldorado, King Solomon, Napoleon-Maghera mines.

CHALCOTRICHITE (See CUPRITE)

CHENEVIXITE


Juab County Tintic district: American Eagle, Mammoth mines.

Tooele County Gold Hill district: Gold Hill (U. S.) mine.

Utah County East Tintic district.

CHERT

(See CRYPTocrystalline quartz)

CHEVKINITE


Grand County onion Creek.

CHLORARGYRITE (See CERARGYRITE)

CHLORITE

Hydrous magnesium aluminum silicate, Mg₃(Si₄O₁₀)(OH)₂·Mg₃(OH)₆ essentially. Monoclinic. In pseudo-hexagonal tabular crystals. Usually foliated massive or aggregates of minute scales. Cleavage perfect. Folia flexible but not elastic. H. 2-2.5. G. 2.6-2.9. Luster vitreous to pearly. Color green of various shades.

Beaver County San Francisco district: Star district: Harrington - Hickory, Rebel, White Rock mines. Box Elder County Rosebud district.

Davis County Antelope Island.

Iron County Paragonah: Iron Peak.

Juab County West Tintic district: Tintic Western mine.

Pitie County Marysvale district.

Salt Lake County Bingham district: Bingham Copper Pit. San Juan County Moses Rock dike.

Summit County Park City district.

Tooele County Dugway district: Bertha, Boston, Four Metals mines; East Erickson district: Ekker Canyon prospect; Gold Hill district: Gold Hill (U. S.), Rube mines; Ophir district: Ophir Hill area - Ophir Hill Consolidated, Ophir Coalition, Sacramento mines; Rush Valley district: Ben Harrison, Calument, Galena King, Honerine, Muerbrook, Salvation-Hercules, Tip Top mines; Wild Cat Mountains: Silver Queen mine; Yellow Springs district.

Utah County American Fork district: Dutchman, Mary Ellena and Live Yankee, Yankee mines; East Tintic district: Eureka Lily, Tintic Standard mines; San Antonio district: Black Balsam, Copper Bullion, Sally Ann, Santaquin Central mines; Silver Lake district: Milkmaid, Ontario mines.

Wasatch County Blue Ledge district: Mayflower mine. Washington County Silver Reef district. Wayne County Fruita: Oyster mine; Miners Mountain district.

Weber County Fremont Island district: Sierra Madre district: Eldorado, King Solomon, Napoleon-Maghera mines.

CHLOROPAL (See NONTRONITE)

CHLOR-O-TAHLLITE (See VARISCITE)

CHROME MICA-CLAY
A green chrome mica-clay. Contains approximately 0.4 to 0.6 percent Cr$_2$O$_3$, and consists of mixed 2M$_j$ and 1M mica polymorphs. Occurs in thin veins, layers, and streaks in sandstone. Micaceous habit. Color green, or gray-green.

*Emery County*: San Rafael district: Flat Top Mesa, Temple Mountain, North Temple Mountain, Eagle Nest prospect, South Temple Mountain.

**CHROMITE**


*Grand County*: Colorado River area, Green River.

*San Juan County*: Colorado River placers.

*Uintah County*: Green River district: Cub Creek.

**CHRYSOCOLLA**


*Beaver County*: Beaver Lake district: Beaver-Harrison, OK, Skylark mines; Granite district: Beaver View mine; Lincoln district: Creole, Lincoln mines; San Francisco district: Horn Silver mine; Star district: Wild Bill mine.

*Box Elder County*: Crater Island district: Copper Blos­som mine; Lucin district: Copper Mountain, Parkdale mines; Newfoundland district: Copper Ridge.

*Davis County*: Antelope Island.

*Garfield County*: Circle Cliffs: Rocky Mountain mine.

*Grand County*: Miners Basin district: Dewey, High Ore, Skylark mines.

*Juab County*: Deseret district: Rockwell shaft; Tintic district: Carissa, Dragon mines; West Tintic district: 1890, Scotia, Tintic Western, War Eagle mines.

*Millard County*: Church Hills: Stevens prospect.

*Morgan County*: Morgan district: Morgan Crescent mine.

*Salt Lake County*: Little Cottonwood district: Emma, Little Emma mines.

*San Juan County*: La Sal Mountains; Monticello district: Copper Queen mine.

*Summit County*: Park City district: Daly, Daly-Judge, Little Bell, Scottish Chief, Silver King, Woodside mines.

*Tooele County*: Deep Creek Mountains: Monroe mine.

*Dugway district*: Belcher, Black Dragon, Black Maria, Bryan, Confidence, Kelly's Hole, Metal States mines; East Erickson district: Copper Jack, Jessel Bezzel, Silver Shield mines: Erickson district: Highland Lassic no. 1 mine; Gold Hill district: Calaveras, Frankie, Gold Hill (U. S.), Gold Bond, Minnehaha, Monroe, Napoleon, Silver King, Unadine, Victory no. 1 mines; Ophir district: Dry Canyon area.

*Washington County*: Mineral Mountain: Emma, Greger­son mines.

**CHRYSOLITE (See OLIVINE)**

**CIMOLITE**

Hydrous silicate of aluminum, Al$_4$Si$_9$O$_{24}$·6H$_2$O. Amorphous. Claylike or chalky. Very soft. G. 2.18-2.30. Color white, gray white, reddish.

*Utah County*: East Tintic district.

**CINNABAR**

Mercuric sulfide, HgS. Hexagonal. Crystals usually rhombohedral or thick tabular. In crystalline incrusta­tions, granular, massive, or as earthy coatings. H. 2-2.5 G. 8. Cleavage good, Slightly sectile. Luster adamantine to metallic to dull. Color vermilion-red when pure, brownish red when impure. Streak scarlet.


*Juab County*: Marysvale district; Quicksilver mine; Mt. Baldy district: Lucky Boy mine.

*Tooele County*: Deep Creek Mountains: Congar Hill mine; Gold Hill district; Grantsville district: Timpie Valley, Ruby Crystal mine; Mercur district: Golden Gate, Hillside, Mercur, Sacramento, Sparrowhawk, Sunshine mines.

**CLAUDETITE**


*San Juan County*: Big Indian district: Mi Vida mine.

**CLAUSTHALITE**


*San Juan County*: Big Indian district: Mi Vida mine.

*La Sal Quadrangle*: Firefly-Pigmay mine.
**CLINOCLOSE**

Hydrous magnesium iron aluminum silicate, \((Mg,Fe,Al)_6(Si,Al)_4O_16(OH)_8\). Monoclinic. Crystals hexagonal in form, often tabular. Cleavage perfect. H. 2-2.5. G. 2.7. Luster somewhat pearly. Color deep grass-green to olive-green. Occurs in zone of hydrothermal alteration.

*Piute County* Marysville district.

*Utah County* East Tintic district.

**CLINOCLASE**


*Juab County* Tintic district: Mammoth mine.

*Tooele County* Gold Hill district: Gold Hill (U. S.) mine.

**CLINOCLASITE** (See CLINOCLASE)

**CLINOHUMITE**


*Beaver County* Beaver Lake district: West Spring.

**CLINOPTILOLITE**

A zeolite, \((Na,K)_2O\cdot Al_2O_3\cdot 10SiO_2\cdot 6H_2O\). Monoclinic. Crystals platy, minute, usually in clusters. H. 3½-4. G. 2.1. Colorless to white. Transparent to translucent. Alteration of tuff.

*Beaver County* Tushar Mountains: Sulfordale, Three Creek Reservoir areas.

*Juab County* Thomas Range: Topaz Mountain, Spor Mountain.

*Millard County* Tusher Mountains: Cove Fort area.

**CLINIZOSITE**

Hydrous calcium aluminum silicate, \(Ca_2Al_3Si_3O_12(OH)\). Monoclinic. Crystals are prismatic, columnar, also massive granular. H. 6-6.5. G. 3.3. Luster vitreous. Color grayish white, green, pink. Transparent to translucent.

*Beaver County* Bradshaw district; Lincoln district: Creole mine.

*Juab County* West Tintic district: Iron King, Tintic Western mines.

*Tooele County* Gold Hill district: Frankie mine; Ophir district: Ophir Hill area - Ophir Hill Consolidated, Ophir Coalition mines; Rush Valley district: Honerine mine.

**COBALT BLOOM** (See ERYTHRITE)

**COBALTITE**

Cobalt sulfarsenide, \(CoAs_2\). Isometric. Commonly in cubes or pyritohedrons, sometimes granular massive to compact. Cleavage perfect. Fracture uneven. Brittle. H. 5.5. G. 6.3. Luster metallic. Color silver-white, inclined to red; also steel-gray. Streak grayish black.

*Tooele County* Gold Hill district: U. S. mine.

**COBALTALCALITE**


*Emery County* San Rafael district: Lucky Strike no. 2 mine.

**COBALTOMENITE**


*Emery County* San Rafael district: Calyx mine.

**COCONINOITE**

Hydrous iron aluminum vanadate phosphate sulfate, \(Fe_2Al_2(VO_4)_2(P_2O_7)(SO_4)(OH)_2\cdot 20H_2O\). Monoclinic. Aggregates of microcrystalline to platy grains. H. soft. G. 2.7. Light creamy color.

*San Juan County* White Canyon district: Jomac mine.

**COCONOITE**

Hydrous iron aluminum vanadate phosphate sulfate, \(Fe_2Al_2(VO_4)_2(P_2O_7)(SO_4)(OH)_2\cdot 20H_2O\). Monoclinic. Aggregates of microcrystalline to platy grains. H. soft. G. 2.7. Light creamy color.

*San Juan County* White Canyon district: Jomac mine.

**COFFINETTE**

Hydrous iron aluminum vanadate phosphate sulfate, \(Fe_2Al_2(VO_4)_2(P_2O_7)(SO_4)(OH)_2\cdot 20H_2O\). Monoclinic. Aggregates of microcrystalline to platy grains. H. soft. G. 2.7. Light creamy color.

*San Juan County* White Canyon district: Jomac mine.
Grand County: Beaver Mesa: Corvusite nos. 1-3 mines.

San Juan County: Big Indian district: Big Buck, Cal Uranium, Homestake. La Sal, Mi Vida, Radon, Rattlesnake mines; Elk Ridge: Avalanche No. 13, Horsehoe No. 1, King Edward, Oakie, Western Payday mines; La Sal Quadrangle: Black Hat, Firefly-Pigmay mines.

Paradox Valley district: Grey Dawn, Vanadium Queen mines.

COLLOPHANE

Hydrous calcium carbonate phosphate, \( \text{Ca}_4(\text{PO}_4)_3\cdot(\text{CO}_3)\cdot\text{H}_2\text{O} \). Massive. Cryptocrystalline apatite, or organic origin. Opaline or horn-like; with dense, layered or colloform structure, \( \text{H} = 3-4 \). \( \text{G} = 2.7 \). Luster weakly vitreous to dull. Color grayish white, yellow, or brown. Associated with fish scales in the Green River Formation found in the Phosphoria Formation.

Daggert County: Uinta Mountains.

Duchesne County: Green River Formation; Uinta Mountains.

Uintah County: Brush Creek; Frandson Canyon; Little Brush Creek; Rock Creek.

Utah County: East Tintic district.

CONICHALCITE


Juab County: Tintic district: American Eagle, Carissa, Centennial Eureka, Gold Chain mines; West Tintic district: Scotia mine.

Millard County: Church Hills: Stevens prospect.

Tooele County: Deep Creek Mountains: Fortuna, Probert mines; Gold Hill district: Frankie, Gold Hill (Western Utah), Pole Star Copper Company mines.

Utah County: East Tintic district.

CONNELLITE

Hydrous basic chloride sulfate of copper, \( \text{Cu}_4(\text{SO}_4)_2\cdot\text{Cl}_4(\text{OH})\cdot\text{H}_2\text{O} \). Hexagonal. Acicular crystals, in radiated groups and as felted aggregates. \( \text{H} = 3 \). \( \text{G} = 3.3 \). Luster vitreous. Color azure blue. Streak pale greenish blue. Translucent.

Juab County: Tintic district: American Eagle, Carissa, Centennial Eureka, Gold Chain mines; West Tintic district: Scotia mine.

COPALITE

A hydrocarbon. Color pale yellow, gray, brown. \( \text{G} = 1.03 \). Associated with coal.

Carbon County: Tidwell and Rideout district: Winter Quarters mine.

Sevier County: Salina Canyon.

COPiapITE

Hydrous basic iron magnesium sulfate, \((\text{Fe}, \text{Mg})\text{Fe}_4(\text{SO}_4)_6(\text{OH})_2\cdot20\text{H}_2\text{O} \). Triclinic. Small, brilliant plates, stacked one upon another in large numbers forming wormy or rod-like structures. Cleavage perfect. \( \text{H} = 2 \). 5 - 3. \( \text{G} = 2 \). 1. Color yellow to bronzey brown. Luster pearly. Transparent to translucent.

Emery County: San Rafael district: Dexter group.

Utah County: East Tintic district.

COPPER

Native copper, \( \text{Cu} \). Isometric. Occurs in cubic, dodecahedral, or tetrahedral forms, often disorted; also massive. \( \text{H} = 2 \). 5. \( \text{G} = 9 \). Fracture hackly. Highly ductile and malleable. Luster metallic. Color copper red. Streak metallic and shining. Opaque.

Beaver County: Beaver Lake district: Skylark mine; San Francisco district: Imperial mine.

Box Elder County: Asbrook district: Vipont mine; Lucin district: Copper Mountain mine.

Juab County: Tintic district: Carissa, Centennial Eureka mines.

Morgan County: Morgan district: Morgan Crescent mine.

Salt Lake County: Bingham district: Commercial, Highland Boy, Yampa mines; Little Cottonwood district: Native Copper mine.

San Juan County: San Juan River; White Canyon district: White Canyon no. 1 mine.

Tooele County: Dugway district: Buckhorn, Four Metals mines; Ophir district: Dry Canyon Area - Mono mine.

Utah County: East Tintic district.

Washington County: Tintagebut district: Apex (Dixie) mine.

COPPER PITCH (See TENORITE)

COQUIMBITE

Hydrous iron aluminum sulfate, \( \text{Fe}_2\text{Al(}\text{SO}_4)_3\cdot9\text{H}_2\text{O} \). Hexagonal. Short hexagonal prisms, up to one-half inch long. \( \text{H} = 2 \). 5. \( \text{G} = 2 \). 1. Color pale violet to purple; small crystals colorless. Cleavage poor. Luster vitreous. Transparent. Taste astringent.

Emery County: San Rafael district: Dexter group.

Utah County: East Tintic district.
CORDIERITE


Utah County Silver Lake district: Deer, Silver Creeks.

CORKITE

Basic sulfate-phosphate of lead and ferric iron, PbFe\(_2\) (PO\(_4\)) (SO\(_4\)) (OH)\(_6\). Hexagonal. H. 3.5. G. 4.3. Cleavage perfect. Color dark green, yellowish green to pale yellow. Luster vitreous to resinous. Occurs in gossans with limonite.

Beaver County Star district: Harrington-Hickory, Rebel, White Rock, Wild Bill mines.

CORNWALLITE


Juab County Tintic district: Centennial Eureka mine.

Tooele County Gold Hill district: Gold Hill (U. S.) mine.

CORONADITE


Beaver County Pruess district: Black Bird, Cactus mines; San Francisco district: Horn Silver mine.

CORUNDUM


Millard County South end of Sevier Lake.

Sevier County Pine Canyon. Black Hawk claims.

San Juan County Moses Rock dikes.

CORVUSITE


Emery County San Juan district: North Mesa Nos. 1, 2, and 5 mines. San Rafael district: Calyx, Rex no. 2, Temple Mountain mines, Temple Rock, South Temple Wash.

Grand County La Sal district: Jack claim; Thompsons district: Parco no. 23, Juniper mines.

San Juan County Elk Ridge: Notch Nos. 5 and 6 mines; La Sal Quadrangle: Black Hat, Evening Star, Firefly-Pigmay, Hesperus, Little Peter, Valley View, Yellow Bird mines; Monument Valley district: Mitten no. 1 mine; Paradox Valley district: Grey Dawn, Vadadium Queen mines.

COSALITE


Beaver County Pruess district: Black Bird, Cactus mines; San Francisco district: Horn Silver mine.

COTUNNITE


Juab County Tintic district.

COVELLITE


Beaver County Beaver Lake district: Beaver-Harrison, OK mines; San Francisco district: Horn Silver mine.

Box Elder County Ashbrook district: Vipont mine.

Emery County San Rafael district: Delta, Dexter Group mines.

Juab County Fish Springs district: Carnation, Emma, Galena, Utah mines; Tintic district: Grand Central, Iron Blossom mines.

Millard County Church Hills: Stevens prospect.
Piute County Ohio district: Tunnel Extension No. 2 mine.
Salt Lake County Big Cottonwood district: Cardiff mine; Bingham district: Highland Boy, Northern Chief, Yampa mines.
San Juan County Big Indian district: Big Indian Copper mine; La Sal Mountains; Monticello district: Copper Queen mine; Paradox Valley district: Grey Dawn mine; Red Canyon district; White Canyon district: Happy Jack mine, White Canyon district: Blue Lizard, Hideout, White Canyon No. 1, W. N. mines.
Summit County Park City district: Park City Consolidated mine.
Tooele County Dugway district: Bertha, Pride of the West mines; Gold Hill district: Cane Springs, Copper Bloom, Ida Lull, Reaper mines; Ophir district: Dry Canyon area - Kearsarge mine.

CRANDALLITE

Juab County Tintic district: Brooklyn mine.

CREDDNERITE

Utah County East Tintic district.

CRISTOBALITE

Piute County Marysvale district.

CROCIDOLITE (See RIEBECKITE)

CRYOLITE

Emery County Southern part of County.

CRYPTOCRYSTALLINE QUARTZ
Silicon dioxide, SiO\(_2\). Cryptocrystalline. Often mammillary, massive. Fibrous and granular varieties. H. 6. 7. G. 2. 6. Luster dull, waxy, vitreous. Transparent to translucent, some opaque. Color white, gray, blue, brown, yellow, green, red, black. The main varieties found in Utah are: Chalcedony, the common variety has a waxy luster, color gray, blue, brown or white. Agate, or variegated chalcedony, is more colorful and is found in many gravels, veins, and replacements. Distinctive agate patterns are the mosslike patterns in moss agate; distinct angular bands are characteristic of fortification agate; feathery-shaped impurities are typical of plume agate Jasper, a granular opaque variety of cryptocrystalline quartz is red, and less commonly yellow, blue or green. Petrified wood is a term loosely applied to wood replaced by silica; the term silicified wood is preferred. Chester, a granular variety, is common in Upper Paleozoic strata, where it occurs as bands, lenses, concretions, and irregular-shaped masses. The Mississippian Deseret, Humbbug, Gardner, Madison, and Pine Canyon strata contain abundant light-gray to brown and black chert. The Pennsylvanian Oquirrh Formation contains creamy, and gray to black chert. The Permian Park City Group has abundant purplish black, gray to black, and reddish brown chert.

Beaver County Blue Valley (black agate with blue bands); Beaver Lake district, San Francisco district, and Rock Corral area (chert, chalcedony).

Emery County Castle Dale, Castle Valley, Cedar Mountain, Green River, Last Chance Desert, San Rafael River, San Rafael district, and Woodside areas (agate, chalcedony, chert, jasper, silicified bone and wood).

Garfield County Moss Agate Hills near Panguitch (moss agate); Circle Cliffs, and Escalante areas (agate, silicified bone and wood).

Grand County Agate Switch, and Cisco areas (agate, chalcedony, jasper); Moab, and Thompsons areas (agate, chalcedony, jasper, silicified bone and wood); Little Grand district (chert); Miners Basin district (chalcedony)

Iron County Cedar Breaks area (red and moss agate); Antelope Range, and Newcastle areas (agate, silicified bone and wood).

Juab County Detroit district, Keg Mountains, San Pitch Mountains, and Thomas Range areas (agate); Jerico (moss agate, plume agate, jasper); Thirteen miles south of Levan (fortification agate); Detroit district. Dugway Range, Mt. Nebo district, Thomas Range, Tintic district,
Topaz Mountain, San Pitch Mountains, and West Tintic district areas (chalcedony, jasper).

Kane County Kanab (silicified wood); Kitchen Corral Canyon (chalcedony); Orderville (agate, silicified wood).

Millard County Detroit district (chalcedony, jasper).

Rich County Bear River Range (jasper).

San Juan County White Canyon district (chalcedony).

Sevier County Glenwood, Henry district areas (chalcedony).

Tooele County Amatrice Hill, Deep Creek Mountains, and Gold Hill district areas (agate, chalcedony); Dugway Mountains (agate geodes); Blue Bell district, Mercur district, and Ophir district areas (jasper).

Utah County: Two miles west of Alpine (jasper); East Tintic district, North Tintic district, and Utah district areas (jasper); Wasatch Mountains (chert).

Washington County Beaver Dam Wash, and Castle Cliffs areas (agate, silicified wood), central (chalcedony in basalts); Silver Reef district (jasper, silicified wood).

Wayne County: Fruita, Hanksville and Torrey areas (agate, jasper, silicified bone and wood).

CRYPTOMELANE


Utah County: East Tintic district: Burgin mine. Lehi district: West Slope area - Wildcat mine.

CUBANITE


Salt Lake County Bingham district: Dixon, Wannamuck mines.

Utah County: East Tintic district: North Lily mine.

CUPRITE


Beaver County Beaver Lake district: Skylark mine; Bradshaw district: Cave mine; San Francisco district: Imperial mine.

Box Elder County Ashbrook district: Vipont mine; Lucin district: Copper Mountain mine.

Cache County: Logan area.

Davis County Farmington district: Morning Star group.

Juab County: Detroit district: Charm, Copperhead, E. P. H., Ibex mines; Mt. Nebo district: Eva mine; Tintic district: Boss Tweed, Carlisa, Centennial Eureka mines.

Kane County Paria Mining Company mine.

Millard County Detroit district: Almond, Blue Bell, Major Drum mines.

Morgan County: Morgan district: Morgan Crescent mine.

Salt Lake County: Big Cottonwood district: Copper King mine; Bingham district: Galena, Old Jordan, Highland Boy, Yampa mines.

San Juan County: Big Indian district: Big Indian Copper mine; Lisbon Valley: Climax nos. 1-2, Lisbon Copper mines.

Summit County: Park City district: Daly-Jude mine.

Tooele County: Dugway district: Black Dragon, Buckhorn, Four Metals mines, Kelly's Hole; Gold Hill district: Pole Star Copper Company mine; Ophir district: Ophir Hill area - Hidden Treasure, Sacramento mines.

Utah County: East Tintic district: Santasquin district: Sally Ann prospect.

Washington County Silver Reef district: Tutsagubet district: Apex (Dixie) mine.

CUPROADAMITE (See ADAMITE)

CUPROBISMUTITE

Copper bismuth sulfide, Cu$^6$Bi$_6$S$_5$. Monoclinic. Similar to but not dimorphous with emplectite. G. 6.35. Occurs as small bladed intergrowths.

Plate County: Ohio district: Tunnel Extension No. 2 mine.

CUPRODESCLOIZITE

(See DESCLOIZITE)

CUPROGOSLARITE


Utah County: East Tintic district.

CUPROPLUMBITE (See BALYDONITE)

CUPROSCHHEELITE

(See CUPROTUNGSTITE)

CUPROSKLODOWSKITE
Hydrous basic copper uranium silicate, Cu(UO$_2$)$_2$(SiO$_3$)$_2$(OH)$_2$·5H$_2$O. Orthorhombic. Minute prismatic or acicular crystals. Usually grouped in radial clusters, also as thin films and botryoidal crusts. Cleavage good. H. 3 – 4. G. 3. 5. Color yellowish green, greenish gray. Luster silky, pearly to dull.

San Juan County: Elk Ridge: North Nos. 1 and 4 mines; White Canyon district: Frey no. 4, Posey mines.

HYDROBASIC COPPER TUNGSTATE


Tooele County: Gold Hill district: Copper Bloom, Kena, Pole Star Copper Company mines.

HYDROBASIC COPPER ALUMINUM SULFATE

Hydrous basic copper aluminum sulfate, Cu$_4$Al$_2$(SO$_4$)$_2$(OH)$_2$·2H$_2$O. Orthorhombic. Occurs as velvet-like druses or wool-like aggregates. G. 2. 9. Luster silky. Color sky-blue or azure blue. Streak pale blue.

Juab County: Tintic district: Carissa, Mammoth mines.

CYRTOLITE (See ZIRCON)

DAHLLITE (See CARBONATE APATITE)

DAMOURITE


Iron County: Paragonah: Iron Peak.

DANBURITE


Tooele County: Gold Hill district: Gold Bond mine.

DAUBREEITE


Juab County: Tintic district: Eagle, Blue Bell mines.

DAVISONITE

Hydrous basic phosphate of calcium and aluminum, perhaps Ca$_3$Al(PO$_4$)$_2$(OH)$_2$·3H$_2$O. Possibly hexagonal. Occurs as botryoidal or spherulitic crusts. Cleavage perfect basal. H. 4. 5. G. 2. 85. Color white.

Utah County: Clay Canyon.

DAWSONITE


Duchesne County: Green River Formation.

DUNNISONITE (See DAVISONITE)

DESCLOIZITE


DEHLNITE

Basic calcium sodium potassium phosphate, (Ca,Na,K)$_5$(PO$_4$)$_3$(OH). Hexagonal. Occurs as botryoidal or fibrous to bladed crystals; also as minute hexagonal prisms. H. 5. G. 3. Cleavage perfect basal. Colorless to pale green, greenish white, grayish. Luster Weakly vitreous.

Utah County: Clay Canyon.

DELESSITE


Utah County: East Tintic district.

DELTALITE

Hydrous basic phosphate of calcium and aluminum, Ca(Al$_3$Ca)(PO$_4$)$_2$(OH)$_2$·3H$_2$O. Hexagonal. As minute crystals; also as cherty or chalky crusts of matted fibers. Cleavage good. H. 5. G. 2. 9. Color gray to lavender, pale blue; also canary yellow.

Utah County: Clay Canyon.

DENNISONITE (See DAVISONITE)

DESCLOIZITE

Grand County: Pack Creek.
Iron County: Escalante district: Escalante mine.
Tooele County: Gold Hill district: New Baltimore mine.

**DIADOCHITE**

Hydrous basic iron sulfate-phosphate, \( \text{Fe}_2(\text{PO}_4)(\text{SO}_4)(\text{OH})\cdot \text{Si}_2\cdot \text{H}_2\cdot \text{O} \). Trichiastic. Microcrystalline, earthy masses. Fracture earthy. H. 3 - 4. G. 2.2. Color yellow to orange brown.

Emery County: San Rafael district: Dexter group.

**DIASPORA**

Hydrogen aluminum oxide, \( \text{AlO}_2 \text{OH} \) or \( \text{AlO(OH)} \). Orthorhombic. Crystals thin platy and elongated; also foliated massive, H. 6 - 7 - 7. G. 3 - 4. Cleavage good. Fracture conchoidal. Luster brilliant, pearly. Color white, gray, colorless, various tints. Very brittle.

Beaver County: Beaver Lake district.
Box Elder County: Ashbrook district.
Utah County: East Tintic district.

**DICROITE** (See CORDIERITE)

**DICKITE**

Hydrous aluminum silicate, \( \text{Al}_3\text{Si}_3\text{O}_9(\text{OH})_4 \). Monoclinic. Usually a clay-like mass, either compact, friable, or mealy. H. 2-2.5. G. 2.6. Cleavage perfect. Luster of plates, pearly; of mass, pearly to dull. Color white, grayish, yellowish. A hydrothermal alteration product.

Piute County: Marysville district.
Utah County: East Tintic district: Burgin mine, North Lily mine.
Utah County: East Tintic district: Burden mine, North Lily mine.

**DIGENITE**


Salt Lake County: Bingham district: Bingham Copper Pit.

**DIOPSIDE**

Calcium magnesium silicate, \( \text{CaMgSi}_2\text{O}_6 \). Monoclinic. In prismatic crystals; also granular massive, columnar and lamellar. H. 5-6. G. 3.2. Cleavage prismatic imperfect. Luster vitreous. Color white to light green. Characteristically found as a contact metamorphic mineral in limestone.

Beaver County: Beaver Lake district: Skylark mine; Rocky district: Bawana mine, Old Hickory mine; San Francisco district: Beaver Carbonate mine; Star district: Lady Bryan. Wild Bill mines.

Salt Lake County: Little Cottonwood district: Alta and Clay Peak stocks along contact.

Sevier County: Trinity prospect.
Tooele County: Gold Hill district: Alvarado, Bonnemort, Cane Springs, Centennial and Enterprise, Copperopolis, Frankie, Gold Bond, Ida Lull mines; Ophir district: Ophir Hill area Cliff, Hidden Treasure, Ophir Hill Consolidated, Ophir Coalition mines; Rush Valley district: Homerine mine.

**DOLOMITE**

Calcium magnesium carbonate, \( \text{CaMg}(\text{CO}_3)_2 \). Hexagonal. Habit rhombohedral, the crystal faces commonly curved. Also massive, coarse to fine granular. H. 3.5. G. 2.6. Cleavage rhombohedral perfect. Brittle. Luster vitreous to pearly. Colorless, White, yellowish brown, pink, rose.

Emery County: San Rafael district: Temple Mountain.
Juab County: Nebo district: Eva mine; Tintic district: Sioux mine.
Millard County: Cricket Mountains.
Summit County: Park City district: Park City Consolidated mine.
Tooele County: Gold Hill district: Ophir district: Ophir Hill area.
Uintah County: Sun Oil Company South Ouray well.

**DOLORESITE**

Hydrous vanadium oxide, \( 3\text{V}_2\text{O}_4\cdot 4\text{H}_2\text{O} \). Monoclinic. Forms radiating groups in bands or veinlets, often shows botryoidal surfaces. Color black. Greenish black streak. Submetallic luster. G. 3.3. Opaque. Cleavage good.

San Juan County: Big Indian district: Big Buck, Cal Uranium, Homestake, La Sal, Mi Vida, Radon, Rattlesnake mines.

**DONKEYITE**

**DUFRENOYSITE**


**DUMORTIERITE**


**DYSCRASITE**


**FARDLEYITE**

Status uncertain. Composition indefinite, possibly a nickelian smithsonite. Color green to pale green. Associated with calcite, smithsonite, and quartz in small veins and replacements. Utah County Wells Canyon.

**FITELITE**

Sodium magnesium carbonate, Na$_2$Mg(CO$_3$)$_2$. Hexagonal. Occurs as tiny crystals a few millimeters in diameter. Good basal cleavage. Authigenic mineral. Found in cores and cuttings from the Green River Formation. Duchesne County Green River Formation: Sinclair Mortenson well.

**ELATERITE** (See WURTZILITE)

**ELPIDITE**

Orthorhombic. Thin prismatic crystals; or fine fibrous fan-shaped aggregates. H. 5. G. 2.5-2.6. Hydrous sodium zirconium silicate, Na$_2$ZrSi$_6$O$_{15}$·3H$_2$O. An authigenic mineral, found in the Green River Formation. Uintah County Sun Oil Company South Ouray well.

**EMBOLITE**


**EMPLECTITE**


**ENARGITE**


**ENDELLITE**
Hydrous aluminum silicate, $Al_2Si_2O_5(OH)_4\cdot 4H_2O$. Monoclinic. Usually in claylike masses, either compact or friable. Perfect cleavage. H. 2. G. 2. 6. Color usually white. Hydrothermal alteration product.

*Utah County* East Tintic district: Larson clay pits, North Lily mine; Fox Hills.

**ENGLISHITE**


*Utah County* Clay Canyon.

**ENSTATITE**


*Juab County* West Tintic district.  
*Tooele County* Gold Hill district.

**EPHESITE**


*Salt Lake County* Big Cottonwood district: Big Cottonwood, Mountain Lake mines.

**EPIDESMINE**

Hydrous calcium sodium aluminum silicate, belonging to the margarite group, $Ca_3Na_3K_2\cdot Al_5\cdot (Al_2Si_3)Si_4O_{10}\cdot 15H_2O$. Orthorhombic. Occurs in minute crystals. G. 2. 2. Cleavage good. Colorless to yellow. Found in lava flows.

*Tooele County* Rush Valley district: Soldier Creek.

**EPIDOTE**


*Beaver County* Bradshaw district: 2 R’s group; Granite district: Big Pass, Burnt Hollow, Contact, Garnet, Molly, Oak, Oak Basin, Rattler, Scheelite, Ward groups; Lincoln district; Star district: Lady Bryan mine.  
*Box Elder County* Grouse Creek Range: Rosebud district.

*Davis County* Antelope Island.  
*Garfield County* Henry Mountains: Bromide, Oro mines.  
*Juab County* West Tintic district: Iron King, Lockheed Iron, Tintic Western mines.  
*Salt Lake County* Big Cottonwood district: Mountain Lake mine; Little Cottonwood district: Patsey Marley mine.  
*Sevier County* Henry district: Trinity prospect.  
*Summit County* Park City district.  
*Tooele County* Gold Hill district: Doctor, Fraction Frankie, Gold Bond, Lucy L., Reaper mines; Ophir district: Ophir Hill area - Cliff, Hidden Treasure, Ophir Hill Consolidated, Ophir Coalition mines; Rush Valley district: Honerine mine.  
*Utah County* Silver Lake district: Milkmaid mine, Silver Creek.  
*Webster County* Sierra Madre district.

**EPSOMITE**


*Beaver County* Gordon district: Sulphurdale; San Francisco district: Frisco Contact mine.  
*Emery County* Castle Dale; Castle Valley.  
*Garfield County* Coyote Creek district: Hampton mine.  
*Sanpete County* Manti.  
*Utah County* East Tintic district.

**ERINITE**

*Juab County* Tintic district: American Eagle, Centennial Eureka, Mammoth mines.

**ERUBESCITE (See BORNITE)**

**ERYTHRITE**

Hydrous cobalt arsenate, $Co_2(AsO_4)_2\cdot 8H_2O$. Monoclinic. Prismatic crystals; often as radial or stellar groups.

San Juan County Elk Ridge: Avalanche No. 13, King Edward mines; White Canyon district: Happy Jack mine.

ESSONITE (See GARNET)

ETTRINGITE

Hydrous calcium aluminum sulfate, \( \text{Ca}_6\text{Al}_2(\text{SO}_4)_2\cdot(\text{OH})_2\cdot26\text{H}_2\text{O} \). Hexagonal. Small prismatic crystals. H. 2-2.5. G. 1.77. Colorless. Transparent, becoming white on dehydration.

Beaver County Rocky district: Old Hickory mine.

EUCARITE


San Juan County Paradox Valley district: Grey Dawn mine.

FAMATINITE


Juab County Tintic district: Mammoth mine.

Utah County East Tintic district.

FARATSHITE

Hydrous aluminum iron silicate, \( (\text{Al},\text{Fe})_2\text{Si}_2\text{O}_5(\text{OH})_4 \). Monoclinic. Intermediate between kaolinite and chloropal. In microscopic hexagonal plates. Soft. G. 2. Color pale yellow.

Utah County East Tintic district.

FERBERITE


Tooele County Gold Hill district: Pole Star Copper Company mine.

FERANDINITE

Hydrous calcium vanadyl vanadate, \( \text{CaO} \cdot \text{V}_2\text{O}_4 \cdot 5\text{V}_2\text{O}_5 \cdot 14\text{H}_2\text{O} \). Massive, cryptocrystalline to fibrous; rarely in rectangular plates. Color dull green.

Emery County Sun Rafael district: Temple Mountain.

FERRIMOLYBDITE

Hydrous ferric molybdate, probably \( \text{Fe}_5(\text{MoO}_4)_3 \cdot 8\text{H}_2\text{O} \). Probably orthorhombic. Massive, and as fibrous crusts or tufted and radial fibrous aggregates. Also as earthy powder or coating. Very soft. G. 3. Luster silky to earthy. Color canary yellow to greenish yellow. Streak pale yellow.

Iron County State Line district.

Salt Lake County Little Cottonwood district.

Tooele County Gold Hill district.

FERRISYMPLESITE

Hydrous iron arsenate, \( \text{Fe}_3(\text{AsO}_4)_2(\text{OH})_3 \cdot 5\text{H}_2\text{O} \). Small irregular masses. Luster resinous. Color amber-brown. H. 2.5. G. 3.

Tooele County Gold Hill district: Gold Hill (U. S.) mine.

FERROGOSLARITE

Hydrous zinc iron sulfate, \( (\text{Zn},\text{Fe})\text{SO}_4 \cdot 7\text{H}_2\text{O} \). Orthorhombic. Usually in crusts or stalagmitic, with fibrous structure. Massive, fibrous, or granular. H. 2.5. G. 1.98. Color green to brown.

Utah County East Tintic district.

FERROLUDWIGITE (See LUDWIGITE)

FERROPALLIDITE

(See SZOMOLNOKITE)

FERROSELITE


Emery County San Rafael district: Calyx, Temple Mountain mines.

FERVANITE

Hydrous ferric vanadate, \( \text{Fe}_4\text{V}_4\text{O}_{16} \cdot 5\text{H}_2\text{O} \). Probably

_Grand County_ Polar Mesa district.

**FIBROFERRITE**

Hydrous basic ferric sulfate, Fe(SO$_4$) (OH)$_2$H$_2$O. Orthorhombic. Occurs as fine fibrous crusts and masses, botryoidal, radial fibrous. H. 2.5. G. 2. Cleavage basal. Luster silky to pearly. Color pale yellow, yellowish green to pale green.

_Emery County_ Green River: 30 miles southwest; San Rafael district: Dexter group.

**FLUELLITE**


_Piute County_ Marysvale district: Freedom no. 2, Prospector no. 1 mines.

**FLUORAPATITE**


_Daggett County_ Uinta Mountains.

_Duchesne County_ Green River Formation; Uinta Mountains.

_Utah County_ Brush Creek; Frandson Canyon; Little Brush Creek; Rock Creek.

_Wasatch County_ Uinta Mountains.

**FLUORITE**


_Beaver County_ Bradshaw district: 2 R's group; Granite district: Bismuth, Big Pass, Contact, Garnet mines; Indian Peak district: Blue Bell, Cougar Spar, Doughout (Doughout), J. B., Lost Sheep, Noonday, Utah mines.

_Grand County_ Blue Spar property; Miners Basin district: Dewey, High Ore mines; Ryan Creek Scheelite prospect.

_Iron County_ Escalante district: Escalante mine; Gold Springs district: Homestake mine.

_Juab County_ Deep Creek Mountains: Apex, Mary, Trout Creek mines: Deseret district, Dugway Range; Fish Springs district: Carnation, Emma, Galena, Utah mines; Honeycomb Hills; Indian Creek; Thomas Range: Autumite no. 8, Bucina no. 1, Good Will, Yellow Chief mines: Spor Mountain: Bell Hill, Blowout, Claybank, Blue Chalk, Hogshack, Northend, Rainbow, Roadside, Dell no. 1, Dell no. 5, Evening Star, Florida, Florida no. 5. Fluorine Queen, Fluorine Queen no. 4, Green Crystal, Harristie, Hilltop, Lost Sheep, Lost Soul, Lucky Louie, Monella, Oversight, Rainbow no. 2, Thursday mines; Topaz Mountain; Trout Creek: West Tintic district: 88, 1903 mines.

_Millard County_ Gordon district: Rain Bow mine; South Pavan Range: Cove Fort, Dog Valley.

_Putah County_ Gold Mountain district: Annie Laurie, Keystone, Sevier mines; Marysvale district: Buddy, Bullion Monarch, Fluorite, Freedom no. 1-2, LaVita, Prospector no. 1 mines; Mt. Baldy district: Deer Trail mine; Ohio district: Bully Boy, Great Western, Shamrock and Webster mines.

_San Juan County_ Big Indian district: Mi Vida mine.

_Sevier County_ Henry district: La Veta prospect.

_Summit County_ Park City district: Silver King, Woods side mines.

_Twole County_ Columbia district: Benmore, Sharp mines: Dutch Mountain; Dugway district: Black Maria, Bryan, Buckhorn, Confidence, Eureka, Four Metals, Golconda, Pride of the West, Kelly's Hole, Lauris, Rainbow, Rattler mines; East Erickson district: Copper Jack, Flying Dutchman, Hard-to-Beat Canyon, Sheeprock, Silver King, Silver Shield mines; Erickson district: Black Jack, Black Rock, Blain, Deer Trail, Indian Boy, May Farmer, Good Hope mines. Gold Hill district: Gold Bond mine; Granite Mountain district: Blue Bell, Cannon Tank Canyon, Deserti, El Dorado, Mountain Queen mines: Ophir district: Lion Hill area - Buffalo mine; Ophir Hill area - Ophir Coalition mine; Rush Valley district: Homeric mine; Wild Cat Mountains: Silver Queen mine.

_Utah County_ Santarquin district: Black Balsam vein.

_Weber County_ Cold Water Canyon; Sierra Madre district: Eldorado property; Weber district: Norman mine.

MONTE CRISTO, MOSCOW, QUARTZITE, NORTH VIRGINIA EXTENSION, VIRGINIA NOS. 1-5, WILD BILL MINE; WASHINGTON DISTRICT: BLUE BELL, COUGAR SPAR, DOUGHOUT (DOUTH), J. B., LOST SHEEP, NOONDAY, UTAH MINES.

_Grand County_ Blue Spar property; Miners Basin district: Dewey, High Ore mines; Ryan Creek Scheelite prospect.

_Iron County_ Escalante district: Escalante mine; Gold Springs district: Homestake mine.

_Juab County_ Deep Creek Mountains: Apex, Mary, Trout Creek mines: Deseret district, Dugway Range; Fish Springs district: Carnation, Emma, Galena, Utah mines; Honeycomb Hills; Indian Creek; Thomas Range: Autumite no. 8, Bucina no. 1, Good Will, Yellow Chief mines: Spor Mountain: Bell Hill, Blowout, Claybank, Blue Chalk, Hogshack, Northend, Rainbow, Roadside, Dell no. 1, Dell no. 5, Evening Star, Florida, Florida no. 5. Fluorine Queen, Fluorine Queen no. 4, Green Crystal, Harristie, Hilltop, Lost Sheep, Lost Soul, Lucky Louie, Monella, Oversight, Rainbow no. 2, Thursday mines; Topaz Mountain; Trout Creek: West Tintic district: 88, 1903 mines.

_Millard County_ Gordon district: Rain Bow mine; South Pavan Range: Cove Fort, Dog Valley.

_Putah County_ Gold Mountain district: Annie Laurie, Keystone, Sevier mines; Marysvale district: Buddy, Bullion Monarch, Fluorite, Freedom no. 1-2, LaVita, Prospector no. 1 mines; Mt. Baldy district: Deer Trail mine; Ohio district: Bully Boy, Great Western, Shamrock and Webster mines.

_San Juan County_ Big Indian district: Mi Vida mine.

_Sevier County_ Henry district: La Veta prospect.

_Summit County_ Park City district: Silver King, Woods side mines.

_Twole County_ Columbia district: Benmore, Sharp mines: Dutch Mountain; Dugway district: Black Maria, Bryan, Buckhorn, Confidence, Eureka, Four Metals, Golconda, Pride of the West, Kelly's Hole, Lauris, Rainbow, Rattler mines; East Erickson district: Copper Jack, Flying Dutchman, Hard-to-Beat Canyon, Sheeprock, Silver King, Silver Shield mines; Erickson district: Black Jack, Black Rock, Blain, Deer Trail, Indian Boy, May Farmer, Good Hope mines. Gold Hill district: Gold Bond mine; Granite Mountain district: Blue Bell, Cannon Tank Canyon, Deserti, El Dorado, Mountain Queen mines: Ophir district: Lion Hill area - Buffalo mine; Ophir Hill area - Ophir Coalition mine; Rush Valley district: Homeric mine; Wild Cat Mountains: Silver Queen mine.

_Utah County_ Santarquin district: Black Balsam vein.

_Weber County_ Cold Water Canyon; Sierra Madre district: Eldorado property; Weber district: Norman mine.

**FORSTERITE** (See OLIVINE)
Magnesium variety of olivine, Mg$_2$SiO$_4$. Orthorhombic. In small equidimensional or tabular crystals. Usually in imbedded grains or in granular masses. H. 6 - 7. G. 3. 2. Fracture conchoidal. Luster vitreous. Color olive to grayish green and brown, also white and yellow. 

**Salt Lake County** Big Cottonwood district: Big Cottonwood, Mountain Lake, Steamboat Tunnel mines; Little Cottonwood district: Alta mine, Alta and Clayton Peak stocks contact zone.

**FOSHAGITE**


**Salt Lake County** Bingham district: Bingham Copper Pit.

**FOURMARIERITE**


**Emery County** San Rafael district: Delta, Lucky Strike, Lucky Strike no. 2 mines.

**FRANCOLITE** *(See FLUORAPATITE)*

**FREIBERGITE**


**Salt Lake County** Bingham district: Silver Shield mine. **Utah County** East Tintic district.

**GALENA**


**Beaver County** Antelope district; Beaver Lake district: Galena mine; Bradshaw district: Cave, Hecla, Nip and Tuck mines; Granite district: Beaver View, Big Pass, Burnt Hollow mines; Indian Peak district; Lincoln district: Creole, Lincoln mines; McGarry district; Newton district; Indian Creek, Pine Grove district: Pine Grove Associates mine; Pues district: Gold Reef, Indian Queen mines; San Francisco district: Beaver Carbonate, Cupric, Horn Silver, Imperial, King David, Michigan, Peacock Copper, Washington mines; Star district: Dotson, Hoosier Boy, Hub, Moscow, Red Warrior, Vicksburg, White Rock, Wild Bill mines.

**Box Elder County** Ashbrook district: Vipont mine; Box Elder district: Lucin district: Cenepeah Tunnel, Copper Mountain, Tectoma Hill mines; Newfoundland district: Park Valley district: Century, Susannah mines; Rosebud district: A & W, Magnitude, Mogul mines; Willard district: Consolidated group, Louise Consolidated mine, Ogden Boilmakers, Silver Queen mines.

**Cache County** Hyrum area: Lucky Star, Tip Top claims; La Plata area: La Plata, Sunrise claims; Logan area; Paradise district: Richmond district.

**Davis County** Wandering Jew mine.

**Emery County** Emery district; San Rafael district: Calyx, Delta, Dirty Devil, Lucky Strike, Temple Mountain mines, Dexter group, Lucky Strike no. 2 mines. **Grand County** Richardson district, Ryan Creek Scheelite prospect.

**Iron County** Escalante district: Escalante mine; Iron Springs district: Granite Mountain, Iron Mountain.

**Juab County** Deep Creek Mountains: Johnson Canyon prospects; Deseret district: Miller mine; Detroit district: Utah mine; Juab district: Mona mine; Mt. Nebo district: Ajaeto no. 2, Big Nebo, Blackett Tunnel, Eva, Freddie, Highland, Santaquin Chief, Santaquin King, Nydicate mines; North Tintic district: Tintic Prince mine; Tintic district: Black Dragon, Beck Tunnel, Bullon Beck, Centennial Eureka, Chief Consolidated, Colorado, Dragon, Eagle and Blue Bell, Eureka Hill, Gemini, Godiva, Grand Central, Humbug, Iron Blossom, Lower Mammoth, Mammoth, May Day, Sioux, Swansea, Victoria mines; Spring Creek district: Queen of Sheba mine; West Tintic district: 88, 1903, Pyramid, Scotia, War Eagle mines.

**Millard County** Leamington district: Arbroath, Leamington Mining Company, Wood Canyon, Yellowstone mines; Saw Back district.

**Morgan County** Argenta district: Carbonate Hill, Carbonate Gem mines. **Pike County** Gold Mountain district: Annie Laurie mine; Mt. Baldy district: Crystal, Deer Trail, Pluto mines; Ohio district: Bully Boy and Webster, Cascade, Copper Belt, Great Western, Iris, Shamrock mines. **Rich County** Swan Creek district: Victoria prospect. **Salt Lake County** Big Cottonwood district: Alta Tunnel and Transportation Company, American Metals, Big Cottonwood, Carbonate, Cardiff, Columbus-Rexall, Howell-Baby McKee, Kennebec, Lulu, Maxfield, Prince of Wales, Reed and Benson, Silver Mountain, Tar Baby, Woodlawn mines; Bingham district: Boston Consolidated, Brooklyn, Burning Moscow, Butterfield, Caledonia, Colorado, Conner, Dalton and Lark, Dixon, Eagle...
Bird, Fortune, Frisco, Galena, Highland Boy, Jersey Blue, Midland, Montezuma, Neptune, Old Jordan, Old Telegraph, Petro, Phoenix, Queen, Queen Lode, Red Wing, Silver Shield, Tiewaukee, U. S. and Lark, Winnamuck, Yampa, York, Yosemite mines; Hot Springs district; Little Cottonwood district: Albion, Cabin, Columbus Consolidated and Wasatch Drainage Tunnel, Columbus-Rexal, Dwyer, Emma, Flagstaff, Little Emma, Michigan - Utah, Peruwinian Consolidated, South Hecla, Superior mines.

San Juan County Big Indian district: Mi Vida mine; Elk Ridge: Notch Nos. 5 and 6, Payday mines; La Sal Quadrangle: Firefly-Pignay mine; Monticello district: Blue Bird, Copper Queen, Danish Girl, Gold Queen mines. Paradox Valley district: Grey Dawn mine; White Canyon district: Happy Jack mine.

Sanpete County Dry Canyon

Sevier County Henry district: Trinity prospect; Salina Creek district: Ball, Lead Hill mines.

Summit County Marble district; Park City district: American Flag, California, Comstock, Creole, Daly, Daly West, Jupiter, Kearns - Keith, Little Bell, Mayflower Nail Driver, New York, Ontario, Scottish Chief, Silver King, Silver King Consolidated, Woodside mines.

Tooele County Bingham district: May Flower mine; Blue Bell, district: Bennion Canyon, Black Hawk, Bogan, Hidden Splendor, Morgan mines; Columbia district: Sharp, Benmore, Sultana mines; Deep Creek Mountains: Cyclone, Devils Pit, Eagles Nest, Gold Star, Leap Year, Midland, Monaco, Monte del Rey, North Pass, Oro del Rey, Overland, Silver Queen, Willow Springs mines, Dutch Mountain; Dogway district: Bertha, Bryan, Buckhorn, Bullion Canyon, Four Metals, Francis, Kellys Hole, Lauris, Raymond - Bald Eagle mines; East Erickson district: Dutch Peak, Indianapolis, Tintic-Delaware mines; Erickson district: Black Joe, Black Rock, Blain, Deer Trail, Indian Boy, May Farmer, Good Hope, Indian Chief, Last Hope no. 3, Utonia mines; Free Comage district: Gold Hill district: Alvarado, Bonanza, Cash Boy, Christmas Mining Company Climax, Copper Queen-Midland Mining Company, Cyclone, Garrison Monster, Gold Belt, Gold Hill (U. S.), Gold Hill Standard, Monaco, New Baltimore, Reaper, Red Jacket, Rube, Silver and Gold Mining Company, Spotted Fawn, Success, Unadine mines; Granite Mountain district: Blue Bell, Cannon Tank, Canyon, Desert, El Dorado, Mountain Queen mines; Grantsville district; Johnson Pass; Lakeside district; Mercur district: Mineral Hill mine; North Tintic district: New Bullion, Scranton mines; Ophir district: Dry Canyon area - Kearsear, Mono, Queen of the Hills, Surprise mines; Lion Hill area - Buffalo mine; Ophir Hill area - Admiral Dewey, Cliff, Hidden Treasure, Ophir Hill Consolidated, Ophir Coalition, Sacramento mines, Osceola district; Rush Valley district: Argent, Ben Harrison, Calounet, Galena King, Honerine, Mescatine, Muerbrook, Salvation - Hercules, Tip Top mines; Silver Island district: Carrie Mack property; Tooele district; Willow Springs district.

Utah County Basset mine.

Utah County Alpine district: Alpine-Galena, Lucky Chance mines; American Fork district: Bay State, Bog, Dutchman, Mary Ellen, Live Yankee, Miller, Pacific, Pittsburgh, Silver Dipper, Water Fall, Yankee mines; East Tintic district: Apex Standard, Burgin, Eureka Bullion, Eureka Lily, Eureka Standard, Iron King, North Lily, Tintic Standard, Tristie mines; North Tintic district: Blowhole Hill, Lehi Tintic, Tintic Empire, Tintic Paymaster mines; Payson district: Nelson, Snydicate mines; Provo district: Monarch mine; Santequin district: Union Chief mine; Silver Lake district: Milkmaid, Ontario mines.

Wasatch County Blue Ledge district: Glencoe, Mayflower, McHenry, Valeo mines; Elkhorn district: Crawford, Nelson and Queen mines; Snake Creek district: Revelator, West Quincy mines.

Wayne County Miners Mountain district.

Weber County Fremont Island district; Sierra Madre district: Eldorado property; Weber district: New Azurite, Standard Mining Company mines.

GARNET GROUP

The group includes a number of important subspecies which conform to the general formula $A_2B_2(SiO_4)_3$ (A = calcium, magnesium, ferrous iron, or divalent manganese; B = aluminum, ferric iron, titanium, or chromium). Isometric. Common forms are dodecahedrons and trapezohedrons. Also in ground granules, massive granular, coarse or fine. H. 6. 5-7.5. G. 3.5-4.3. Luster vitreous to resinous. Color varying with composition; mostly red, brown, yellow, white, green, black. Transparent to translucent. Grossularite is the most common garnet in Utah and occurs in contact metamorphic zones in crystalline limestones.

Beaver County Beaver Lake mine: Bat Ridge, Skylark mine; Bradshaw district: 2 R's group; Granite district: Big Pass, Contact, Molly, Oak, Oak Basin, Rattler, Scheelite, Ward groups. Lincoln district: Creole mine; Fine Grove district: Pine Grove Associates mine; Prewess district: Cactus Gulch, Copper Gulch; Rocky district: Bawana, Copper Ranch, Old Hickory mines; San Francisco district: Cupric mine; Star district: Common-wealth, Copper King, Kempe, Progressive, St. Mary's, Wild Bill mines; Washington district; Orizaba Consolidated mine, Lucero claim.

Box Elder County Dove Creek; Rosebud district.
Minerals and Mineral Localities of Utah, Kenneth C. Bullock

Davis County
Antelope Island.

Iron County
Gold Springs district: Homestake mine.

Juab County
Dugway Range; Thomas Range: Topaz Mountain; Tintic district: Carissa mine; Spring Creek district: Queen of Sheba mine; West Tintic district: Iron King, Tintic Western mines.

Millard County

Pike County
Gold Mountain district.

Salt Lake County
Big Cottonwood district: Mountain Lake mine; Bingham district; Little Cottonwood district: Alta, South Hecla mines, Alta and Clayton Peak stocks contact zone.

San Juan County
Chinle Wash; Comb Ridge; Moses Rock; Mule Ear; Navajo Reservation.

Sevier County
Henry district: Trinity prospect.

Summit County
Bonanza Flat; Park City district: Jupiter mine.

Tooele County
Deep Creek Mountains: Midas mine; Dugway district; Gold Hill district: Alvarado, Calaveras, Cane Springs, Copperopolis, Doctor, Fraction Lode, Frankie, Lucy L., Ida Luli mines; Granite Mountain district: Blue Bell mine; Ophir district: Ophir Hill area - Chicago, Hidden Treasure, Ophir Hill Consolidated, Ophir Coalition mines; Rush Valley district: Settlement Canyon, Soldier Creek.

Utah County
Silver Lake district: Deer Creek, Milkmaid mine. Silver Creek.

Wasatch County
Bonanza Flat; Snake Creek district.

Weber County
Ogden Canyon; Sierra Madre district; Strongs Canyon.

GARRELSITE

Hydrous barium sodium boron silicate, \( \text{Ba}_2\text{Na}_6\text{Si}_3\text{O}_{13}(\text{OH})_7 \). Monoclinic. Crystals have steep dipyramidal shape, faces striated. Colorless, but darkened by inclusions. Occurs as sparse crystals in the Green River Formation.

Uintah County
Sun Oil Company South Ouray well.

GERSKUTITE

Hydrous calcium aluminum fluoride, \( \text{CaAl(OH)}_3\text{F}_4\text{H}_2\text{O} \). Probably monoclinic. Massive or nodular, earthy. Consists of very minute needles. H. 2. G. 2.7. Colorless to white. Luster dull.

Pike County
Marysvale district: Freedom no. 2 mine.

Utah County
East Tintic district.

GEOCRONITE


Juab County
Tintic district: Colorado mine.

Summit County
Park City district: Silver King mine.

GEL-BERTRANDITE

(See BERTRANDITE)

GERSDORFFITE

Nickel arsenic sulfide, \( \text{NiAs}_2 \). Isometric. Octahedral, pyritohedral crystals; sometimes striated as in pyrite; lamellar and granular massive. Cleavage perfect. Fracture uneven. H. 5.5. G. 5.9. Luster metallic. Color silver-white to steel gray, often tarnished gray or grayish black. Streak grayish black. Opaque.

San Juan County
White Canyon district: Happy Jack mine.

GIBBSITE

Aluminum hydroxide, \( \text{Al(OH)}_3 \). Monoclinic. Spheroidal concretions, incrustations, or earthy masses. H. 3. G. 2.3. Luster pearly. In hydrothermal alteration zones of ore deposits.

Millard County
Church Hills: Stevens prospect.

Tooele County
Oquirrh Mountains: Manning Canyon Shale; Stansbury Mountains: Manning Canyon Shale.

Utah County
Beverly Hills: Manning Canyon Shale; East Tintic district; Lake Mountain: Manning Canyon Shale; Lehi district: Manning Canyon Shale; Thorne Hills: Manning Canyon Shale; Wasatch Mountains: Manning Canyon Shale.

GILSONITE


Duchesne County
Castle Peak district; Myton.

Uintah County
Asphalt Wash; Black Dragon mine; Bonanza mine; Fort Duchesne; Rainbow mine.

GLAUBERITE


Box Elder County
Shores of Great Salt Lake.
Davis County Shores of Great Salt Lake.
Salt Lake County Shores of Great Salt Lake.
Tooele County Shores of Great Salt Lake.

GLAUCONITE

Essentially a hydrous silicate of iron and potassium. 
\[(K,Na)\] \((Al,Fe,Mg)\] \((Al,Si)\] \(O\] \((OH)\] \(7\]. Monoclinic. H. 2. G. 2.4-2.9. Considerable variation in composition. Probably occurs in both colloidal and crystalline forms. Usually amorphous. Resembles chlorite. Color dull green. Found in ocean sediments near the continental shores. Found in the Cambrian Ladore Formation, and Jurassic Curtis Formation.

Daggett County Uinta Mountains.
Uintah County Eastern Uinta Mountains; Split Mountain; North of Vernal.

GOETHITE


Beaver County San Francisco district: Pruess district: Blackbird, Cactus mines.
Box Elder County Lucin district: Copper Mountain, Tecoma Hill mines.
Grand County Miners Basin district: High Ore mine.
Iron County State Line district.
Juab County Detroit district: Iron Blossom mine.
Pike County Marysville district: La Vita prospect, Silica Hills.
Salt Lake County Big Cottonwood district: Eclipse, Reed and Benson mines.
San Juan County White Canyon district: Happy Jack mine.
Utah County East Tintic district: Burgin mine.

GOLD


Beaver County Bradshaw district: Cave, Hecla, Jolly, Nip and Tuck mines; Fortuna district: Rocky Hollow; San Francisco district: Golden Reef, Michigan group mines; Granite district: Beaver View, Big Pass, Contact, Garnet group mines; Newton district: Indian Creek, Rob Roy mine; Pruess district: Gold Reef mine.
Box Elder County Ashbrook district: Vipont mine; Dove Creek; Lucin district: Copper Mountain, Tecoma Hill mines; Park Valley district: Century, Susannah mines; Promontory district: Lakeview mine; Rosebud district: Mogul mine, Red Buttes; Willard district: Overland claim.
Cache County Hyrum area: Moon claim.
Daggett County Red Creek: Yellow Canary uranium deposit.
Davis County Farmington district: Morning Star mine, Parrish Canyon.
Emery County Emery district: southern part of County. Garfield County Colorado River district: Dirty Devil River south to Lake Canyon; Henry Mountains: Bromide, Crescent Creek, south flank of Mount Ellen, Cuprum, Oro mines.
Grand County Bald Mesa; Colorado River area: Dolores River south to Amasa Back; Miners Basin district: Dillon, M. I. F. mines, Placer Creek, Tornado deposit; Salt Valley: Wilson Mesa.
Juab County Deep Creek Mountains: Gold Bond, Jumbo, Queen of Sheba mines; Detroit district: Charm, Copperhead, E. P. H., Ibex, Martha mines; Tintic district: Black Jack, Bullion Beck, Centennial, Empire, Eureka, Eureka Hill, Mammoth, May Day, Victoria mines; Trout Creek district; West Tintic district: Scotia, War Eagle mines.
Kane County Colorado River district; Paria River, Shinarump clay 15 miles north of state boundry.
Millard County House Range: Amasa River, Granite Canyon, Notch Peak; Leamington district: Yellowstone mine.
Morgan County Morgan district: Chicago-Utah, Iron King, Morgan Consolidated., Morgan Crescent, Red Eagle mines; Strawberry mine.
Pike County Deer Creek; Gold Mountain district: Annie Laurie, Mill Creek on Signal Peak, Sevier mines. Mt. Baldy district: Deer Trail, Pluto mines; Ohio district: Bully Boy and Webster, Cascade, Dalton, Pine Gulch Creek, Tunnel Extension No. 2, Wedge mines.
Salt Lake County Big Cottonwood district: New State mine: Bingham district: Bingham Copper Pit, Broad Gauge, Boston Consolidated, Burning Mosquito, Butterfield, Caledonia, Commercial, Dalton and Lark, Dixon, Galena, Last Chance, Montezuma, Nast, Old Jordan, Old Telegraph, Parnell, Red Wing, U. S. and Lark, Winnenmuck, Yosemite mines; Bingham district: Bear Gulch, Bingham Canyon, Carr Fork, Little Cottonwood district:
Dwyer claims; Lower Placer district.

San Juan County: Abajo Mountains: south flank; Bluff; Colorado River; San Juan River junction south to Lees Ferry; Golden Queen mine; La Sal Mountains: Monticello district: Blue Bird, Copper Queen, Danish Girl, Duckett, Gold Queen, Log Cabin mines; Point Lookout Placer; San Juan River: Monezuma Canyon west to Colorado River.

Summit County: Park City district: Daly-Judge, Mayflower, New York, Silver King, Woodside mines.

Tooele County: Columbia district: Sultana mine; Deep Creek Mountains: Devils Pit, Eagles Nest, Midland, Oro del Rey, Red Hill mines; Dugway district: Four Metals mine; East Erickson district: Indianapolis mine; Free Coinage district; Gold Hill district: Alvarado, Cane Springs, Copper Bloom, Lucy Mida, Rube, Yellow Hammer mines; Granite Mountain district: Desert, El Dorado, Mountain Queen mines; Mercur district: Consolidate Mercur, Daisy, La Cigale, Golden Gate, Sacramento mines; Ophir district: Dry Canyon area - Surprise mine; Lion Hill area: Buffalo, East Side, Empire, Iron, Monarch, Northern Light, Woodruff mines; Rush Valley district: Honomone mine; Wild Cat Mountains: Silver Queen mine.

Utah County: Clute Canyon.

GORDONITE

Hydrous potassium ferric sulfate, KFe(SO\textsubscript{4})\textsubscript{2}·4H\textsubscript{2}O. Monoclinic. Occurs as radiating clusters, or fine-grained crusts. Larger crystals striated. H. 3.5. G. 2.2. Cleavage good. Fracture conchoidal. Brittle. Luster vitreous to pearly. Colorless to smoky white.

Utah County: Eastern Tintic district.

GOLDICHITE

Hydrous potassium ferric sulfate, KFe(SO\textsubscript{4})\textsubscript{2}·4H\textsubscript{2}O. Monoclinic. Occurs as radiating clusters, or fine-grained crusts. Larger crystals striated. H. 3.5. G. 2.2. Cleavage good. Fracture conchoidal. Brittle. Luster vitreous to pearly. Colorless to smoky white.

Utah County: Eastern Tintic district.

GOYAZITE


Utah County: Clute Canyon.

GRANTSITE

Hydrous sodium calcium vanadate, Na\textsubscript{2}Ca\textsubscript{2}(VO\textsubscript{4})\textsubscript{2}·8H\textsubscript{2}O. Monoclinic. Occurs as aggregates of microscopic fibers or blades; botryoidal. H. soft. G. 2.9. Color dark olive green to greenish black. Luster greasy to resinous. Transparent.

Utah County: Silver Lake district.

GRAPHITE


Utah County: Silver Lake district.

GREENOCKITE


Utah County: Big Indian district: Mi Vida mine.
White Canyon district: Happy Jack mine.
Utah County East Tintic district: North Lily mine.

GROSSULARITE (See GARNET)

GUANO

Essentially a tricalcium phosphate. Found in areas frequented by birds, comprised chiefly of their excrement.
Box Elder County Bird Island: Gunnison Island.

Millard County Tabernacle Mountain.

GUMMITE

No single formula attributed to these materials, essentially oxides of uranium, usually with Pb, Th, rare earths, and large amounts of water. Massive, dense. Also as crusts. H. 2.5-5. G. 3.9-6.4. Fracture conchoidal, uneven. Brittle. Luster greasy to vitreous, often resembles gum. Color yellow, orange, brown, black.
Emery County San Rafael district: Delta mine.
San Juan County Paradox Valley district: Grey Dawn mine.

GUNNINGITE

Utah County East Tintic district.

GYPSITE

Earthy mixture of gypsum with clay and sand. Found on playas.
Millard County West of Fillmore, dunes twenty feet high.
Tooele County Large dunes near Knolls.

GYPSUM

Hydrous calcium sulfate, CaSO₄·2H₂O. Monoclinic. Single crystals commonly simple in habit. Also granular massive, foliated, and rock forming. H. 2. G. 2.3. Cleavage perfect one direction, two imperfect. Flexible, not elastic. Luster vitreous to pearly. Colorless, white, gray, yellowish or brownish. Gypsum occurs as extensive beds of sedimentary origin, associated with anhydrite. In southeastern Utah found in the Paradox Member of the Hemsoa Formation; in east-central Utah it occurs in the Carmel, Entrada, and Summerville Formations; in central Utah in the Arapieh Shale; in southwestern Utah in the Kaibab, Moenkopi, Carmel, and Curtis Formations; in northeastern Utah in the Thaynes and Carmel Formations. Huge selenite crystals have been found in caves in Wayne County, and other parts of the State.
Beaver County Prueus district: Blackbird, Cactus mines; San Francisco district: Horn Silver mine.
Box Elder County Promontory district: Lakeview Mining properties.

Duchesne County Lake Fork; Rock Creek.

Emery County Cedar Mountain district; Fullers Bottom; Horn Silver Gulch; San Rafael district: Delta mine, Flat Top Mesa; San Rafael River: Tidwell Ranch.
Garfield County Circle Cliffs: Acme, Black Widow, Blue Goose, Rocky Mountain, Steam Boat mines; Coyote Creek district: Hampton mine, Water Pocket Canyon.
Grand County Agate Switch; Cane Creek: Texas Gulf Potash mine; Fisher Valley; Gypsum Hills; Moab Valley; Orion Creek; Polar Mesa district; Paradox Basin; Salt Valley; Seven Mile antelope; Thomspons area.
Iron County Cedar Canyon; Kanarraville.
Juab County Mono district: San Pitch Mountains; Chicken Creek, Levan, Nephi, Salt Creek; Tintic district: Mammoth mine.
Kane County Cannonville; Glendale; Johnson Creek; Kanab Creek; Kimball Valley; Orderville; Paria.
Millard County Fillmore; Gordon district: Cove Creek, Black, Excelsior, Maripose, New York, Philadelphia, Prince Albert, Sulphur King, Queen Victoria mines; Kanosh.
Pitto County Gold Mountain district; Marysvale district; Quick silver mine; Sevier Canyon.
Salt Lake County Shores of Great Salt Lake.
San Juan County Gypsum Creek; Moab Valley; Monticello district; Paradox Basin; San Juan River; White Canyon district: Hapy Jack mine.
Sanpete County Gunnison; Mayfield; Twelve Mile Canyon.
Sevier County Glenwood; Henry district: Trinity prospect; Rock Candy Mountain; Sigurd.
Summit County Park City district: Wabash property.
Tooele County Dugway district: Bertha, Four Metals, Kellys Hole, Metal States, Surplus mines; Gold Hill district: Gold Hill (U. S.) mine; shores of Great Salt Lake; Knollos; Mercur district: Mercur mine; Ophir district: Ophir Hill area - Admiral Dewey prospect; Rush Valley district: Mescatine mine.
Uintah County Steinaker Draw; Uteland Knoll district: Ouray; Whiterocks Canyon.
Utah County Utah district: Alpha, Emerald, Lucky Boy, Queen of the West, Spalding, Trotter mines.
Washington County Santa Clara district: Black Beauty
no. 1 claim; Silver Reef district; St. George; Toquerville; Virgin River.
Wayne County Caineville: Fremont River; South Wash; Fruita: Oyler mine; Last Chance Gulch; Muddy River.

GYROLITE
Salt Lake County Bingham district: Bingham Copper Pit.

HALITE
Box Elder County Great Salt Lake.
Grand County Cane Creek: Texas Gulf Potash mine. Cane Creek: Paradox Basin; Salt Valley; Seven Mile anticline.
Juab County San Pitch Mountains: Chicken Creek, Levan, Nephi, Salt Creek.
Pike County Marysville district.
Salt Lake County Great Salt Lake.
San Juan County Moab Valley.
Sanpete County Gunnison; Twelve Mile Canyon.
Sevier County Glenwood; Redmond; Sigurd.
Tooele County Great Salt Lake: Great Salt Lake Flats; Salduro; Wendenover. Washington County Virgin River.

HALLOYSITE
Box Elder County Lucin district: Copper Mountain, Tecoma Hill mines.
Juab County Tintic district: Dragon mine, Packard Peak.
Millard County Church Hills: Stevens prospect.
Pike County Marysville district.
Summit County Park City district: Park-Bingham Tunnel.
Tooele County Blue Bell district: The Iron mine.
Utah County East Tintic district: Larsen clay pits; Fox Hills.

HALOTRICHITE
Emery County San Rafael district: Dexter group. Uintah County Uteland Knoll district: Ouray. Utah County East Tintic district: Tintic Standard mine.

HECTORITE
Hydrous magnesium lithium silicate, Na$_{0.33}$(Mg,Li)$_3$Si$_4$O$_{10}$(F,OH)$_2$. Monoclinic. A member of the smectite group. Massive, very fine grain; claylike. H. 1-2. G. 2-3. Color white. Luster dull.
Duchesne County Green River Formation.
Juab County Thomas Range: Spor Mountain. Uintah County Green River Formation.

HEDENBERGITE

HELIUM
Helium, He. Inert, colorless, odorless gas. Helium is next to hydrogen in lightness. Density 0.178. Associated with natural gas.
Emery County Woodside Dome. Grand County Harley Dome.

HENVITE
Beaver County Granite district: Miller mine.
HEMATITE


Beaver County: Beaver Lake district: Black Rock mine, Iron Mountain Pass, Skylark mines, Blue Mountains; English Springs; Granite district: Burnt Hollow, Contact, King of the Hills groups; Lincoln district: Creole, Lincoln mines; Pine Grove district: Emma, Iron Duke (Iron Gloery or Ruby Iron), Iron Queen (Mooney, Wilson, Last Chance), King Iron prospects; San Francisco district: Imperial mine; Star district: Wild Bill mine; Wah Wah Mountains: Violet Claims.

Box Elder County: Ashbrook district: Vipont mine; Lucin district: Copper Mountain, Tecoma Hill mines; Willard district: Gold Standard, Wasatch Iron and Gold mines.

Cache County: Hyrum area: Moon claim; Paradise district: Mineral Point.

Daggett County: Red Creek: Yellow Canary uranium deposit; Red Creek Complex.

Davis County: Antelope Island: Farmington district: Parrish Canyon.

Duchesne County: Duchesne Iron prospect; Moon Lake iron deposit; Red Ledge: Hilltop Iron claims.

Emery County: San Rafael district: Delta mine.

Garfield County: Henry Mountains: Bromide, Oro mines.

Grand County: Miners Basin district: Dewey, High Ore mines.

Iron County: Escalante district: Escalante mine; Iron Springs district: Granite Mountain, Iron Mountain, Three Peaks (See under MINERAL LOCALITIES, Iron County); Pinto Iron district: Stateline district: Creole, Gold Dome, Johnny, Ofer, Phelps, Utah Spur mines.


Millard County: Cricket Mountains: ferruginous member of Prospect Mountain Quartzite; Gordon district: Excelsior, Mariposa, New York, Prince Albert, Queen Victoria mines, Cove Creek; Twin Peaks (martite variety).

Morgan County: Hardscrabble district: Norway group.

Pike County: Marysvale district: East Slope no. 2, La Vita prospects; Mt. Baldy district: Deer Trail mine.

Salt Lake County: Bingham district: Broad Gauge, Highland Boy, Yanapa mines.

San Juan County: White Canyon district: Happy Jack, Jomac mines.


Summit County: Park City district: Mayflower mine, Jupiter mine.

Tooele County: Columbia district: Iron King mine; Deep Creek Mountains: Devils Pit, Eagles Nest, Iron Blowout, Oro del Rey mines; Blue Bell district: Bogan, The Iron mines; Columbia district: Iron Hope prospect; Dugway district: Bertha, Black Dragon, Bryan, Confidence, Four Metals, Kellys Hole, Lauris, Eagle mines; East Erickson district: Indianapolis, Silver King, Tintic-Delaware mines; Gold Hill district: Calaveras, Gold Bond, Reaper mines; Granite Mountain district: Desert, El Dorado, Mountain Queen mines; Rush Valley district: Soldier Creek mine.

Utah County: Ashley Creek: Woodside Iron prospect; Browns Park area: Carbonate district: Dyer, Pope Iron mines.

Utah County: East Tintic district: Apex Standard, Eureka Lily, Iron King, North Lily, Tintic Standard mines; North Tintic district: Selma mine, Provo district: Monarch mine; Sueltanquín district: Copper Bullion, Sultanaquin Central Tunnel, Union Chief mines; Silver Lake district: Deer, Silver Creeks; Utah district: Alpha, Emerald, Lucky Boy, Queen of the West, Spalding, Trotter mines.

Wasatch County: Rhodes Plateau district: Ferry Iron deposit.


Weber County: Sierra Madre district: Weber district.

HEMIMORPHITE


Beaver County: San Francisco district: Horn Silver mine; Star district: Emerson, Sundown mines, Cedar-Talismen, Hoosier Boy mines.

Box Elder County: Lucin district, Tecoma Hill mine; Promontory district: Lakeview Mining properties.

Iron County: Escalante district: Escalante mine.

**HERCYNITE**


**HESSITE**


**HETEROLITE**


**HEWETTITE**

Hydrous calcium vanadate, $\text{CaV}_6\text{O}_{16} \cdot 9\text{H}_2\text{O}$. Monoclinic. Found as nodular aggregates, fibrous coatings, microscopic needles. H. soft. G. 2.6. Luster silky. Color deep red.

**HEWITTITE**

Hydrous calcium silicate, $\text{Ca}_5\text{Si}_{2}\text{O}_{7}(\text{OH})_4 \cdot 2\text{H}_2\text{O}$. Amorphous. Compact. Fracture conchoidal. H. 3. G. 2.5-3. Luster greasy. Color black to brownish black.

**HIGGINSITE (See CONICHALCITE)**

**HISINGERITE**

Hydrous iron silicate, $\text{Fe}_2\text{Si}_2\text{O}_5(\text{OH})_4 \cdot 2\text{H}_2\text{O}$. Monoclinic. Short prismatic crystals. Usually massive; fibrous; sometimes concretionary. H. 6. G. 4.95. Brittle. Luster metallic to dull. Color black, gray black, silvery gray.

**HOLLANDITE**


**HORNBLENDE**

A complex series, general formula, $\text{Ca}_2\text{Na}(\text{Mg,Fe})_4 \cdot (\text{Al,Fe,Ti})(\text{Al,Si})_6\text{O}_{22}(\text{OH})_2$. Monoclinic. A common amphibole. Cleavage prismatic. Luster vitreous. H. 5-6. G. 3. 2. Color various shades of dark green to black.

**HUEBNERITE**

Manganese tungstate, $\text{MnWO}_4$. Monoclinic. Commonly long prismatic crystals. Striated or furrowed. Cleav-
HYDROZINCITE

Beaver County Tintic district: Gemini, May Day mines.
Pine Grove Ohio district: Bully Boy and Webster mines.

HYPERSTHENE

Beaver County Star district: Lady Bryan mine.
Salt Lake County Alta stock.

ICELAND SPAR (See CALCITE)

HYDROMICA (See Illite)

HYDROMAGNESITE
Hydrous magnesium carbonate hydroxide, $\text{Mg}_2(\text{CO}_3)_4(\text{OH})_2\cdot 4\text{H}_2\text{O}$. Monoclinic. Crystals tiny. Occurs as tufts, rosettes, or acicular or bladed crystals. Also massive, chalky, or mealy. Cleavage perfect Brittle. H. 3.5-3.6. G. 2.2. Luster vitreous, silky or pearly. Colorless to white.

Salt Lake County Big Cottonwood district: Big Cottonwood, Mountain Lake mines.

HYDROMICA (See Illite).
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Peak, Painter Springs.
Salt Lake County Little Cottonwood district: Alta mine, Clayton Peak Stock contact zone.
Tooele County Deep Creek Mountains: Midas mine; Gold Hill district: Alvarado, Cane Springs, Midas mines; Pine Canyon.
Wasatch County Clayton Peak.

ILLITE

Hydrous potassium aluminum silicate, $K_2(Si_6Al_2)Al_2O_{20}(OH)_4$. Monoclinic. Massive, extremely fine grained. Often admixed with other clay minerals. H. 1-2. G. 2.6-2.9. Usually white, also pale colors.
Duchesne County Green River Formation.
Emery County San Rafael district: Delta, Temple Mountain mines.
Salt Lake County Bingham district: Bingham Copper Pit.
San Juan County White Canyon district: Happy Jack mine.
Sevier County Henry district: Trinity prospect; Rock Candy Mountain.
Tooele County Dugway district: Bertha claim; Oquirrh Mountains: Manning Canyon Shale; Stansbury Mountains: Manning Canyon Shale.
Uintah County Green River Formation.
Utah County Beverly Hills: Manning Canyon Shale; East Tintic district: Burgin mine; Lake Mountain: Manning Canyon Shale; Lehi district: Manning Canyon Shale; Thorpe Hills: Manning Canyon Shale; Wasatch Mountains: Manning Canyon Shale.

ILMENITE

Beaver County San Francisco district.
Emery County Emery.
Garfield County Escalante; Henry Mountains; Bromide, Oro mines, southwestern flanks of Henry Mountains.
Kane County Southern part of Kaiparowits Plateau.
Tooele County Gold Hill district: Reaper mine.

ILLSEMANNITE

Molybdenum oxide, $MoO_3-nH_2O$? Found only as earthy masses, stains, or as a disseminated pigment.

Color black, blue black, blue.
Grand County La Sal district: Jack claim.
Piute County Marysvale district: Bullion Monarch, Freedom nos. 1-2, Prospector no. 1, Quick silver mines.
San Juan County Elk Ridge: King Edward, King James-Virgene, Notch Nos. 1 and 4 Mines; Red Canyon district: Frey no. 4 mine; White Canyon district: Happy Jack mine.
Uintah County Uteland Knoll district.

INDIUM

Rare metal, indefinite mineral association. Found in contact metamorphic ore deposits and in replacement veins. Associated with scandium.
Tooele County Gold Hill district.

INGRAMITE

An asphaltic pyrobitumen. Occurs in the basal Green River Formation.
Utah County Colton: Higgins, James Peak (Brown Bear), Kyune Canyon, Midnight, Miller, Pleasant Valley, Thomas Ranch, Town mines.
Wasatch County Soldier Summit: Culmer Brothers, Soldier Summit, U. S. mines.

IOLITE (See CORDIERITE)

JALPAITE

Silver copper sulfide, $Ag_2CuS_2$. Isometric. Small clusters of round grains, or inclusions in galena and tetrahedrite. Secondary growths in cerussite.
Utah County East Tintic district: Burgin mine.

JAMESONITE

Beaver County San Francisco district: Horn Silver mine.
Juab County Tintic district; West Tintic district: Scotia mine.
Summit County Park City district: California mine.
Tooele County Gold hill district: Gold Hill (U. S.), U. S. mines; Silver Island district: Carrie Mack property.
Utah County American Fork district: Mary Ellen and Live Yankee, Yankee mines; East Tintic district: Eureka Lily mine.
JAROSITE


Beaver County Granite district: Big Pass group; San Francisco district: Horn Silver mine; Star district: Moscow, Red Warrior, Wild Bill mines.

Emery County San Rafael district: Fuemrol no. 2 mine.

Iron County Stateline district: Creole, Gold Dome, Johnny, Ofer, Phelps, Utah Spur mines.

Juab County Detroit district: Tintic district: Eagle and Blue Bell mines.

Millard County Church Hills: Stevens prospect.

Morgan County Argenta district: Carbonate Hill, Carbonate Gem mines.

Piute County Marysvale district: Copper Cap, Freedom no. 1, Silica Hills, Yellow Jacket mines; Mt. Baldy district: Deer Trail mine.

San Juan County Elk Ridge: Notch Nos. 1 and 4 mines; White Canyon district: Fry No. 4, Happy Jack, Jomac mines.

Sevier County Monroe Canyon: Rock Candy Mountain.


Utah County East Tintic district: Burgin, Tintic Standard, Trixie mines.

Washington County Tuttagabet district: Apex (Dixie), Paymaster mines Wayne County Coleman Canyon to Oak Creek: Grand Wash to Capitol Wash; Rabbit Valley, Old Dixon prospect.

JASPER (See CRYPTOCRYSTALLINE QUARTZ)

JASPEROID (See CRYPTOCRYSTALLINE QUARTZ)

JEFFERISITE

Hydrous magnesium iron aluminum silicate, $10(\text{Mg,Fe})_2$ $0.4(\text{AlFe})_2$ $10\text{Si}_2\text{O}_7\text{H}_2\text{O}$. Hydrated mica belonging to the vericulites. Occurs in broad plates and small scales. H. 1.5. G. 2.3. Cleavage basal perfect. Pearly luster. Color dark yellowish brown. Alteration product.

Tooele County Gold Hill district: Centennial and Enterprise mines.

JENKINSITE

Hydrous magnesium iron manganese silicate, $(\text{Mg,Fe,Mn})_4\text{Si}_2\text{O}_{10}\text{H}_2\text{O}$. Associated with minerals in altered wall rocks.

Utah County East Tintic district.

JET

Black variety of lignite coal. Organic gem stone. Soft, light in weight. Black color. Takes a velvety polish, can be worked with a lathe. Forms disk-like inclusions in narrow coal seams found along cliffs of Coaly Basin. Most important source of jet in North America.

Garfield County Henry Mountains.

Wayne County Henry Mountains: Mt. Ellen, Coaly Basin.

JOHANNITE


Emery County San Rafael district: Consolidated, Delta mines.

Garfield County Henry Mountains.

Piute County Marysvale district: Bullion Monarch, Prospector no. 1 mines.

San Juan County Red Canyon district: Frey no. 4, Posey mines; White Canyon district: Happy Jack, Hideout mines.

Wayne County Fruita: Oyler mine.

JORDISITE


Piute County Marysvale district: Buddy, Bullion Monarch, Freedom no. 1-2, Prospector no. 1 mines.

San Juan County Red Canyon district: Frey no. 4 mine.

KAINITE
Hydrous sulfate and chloride of potassium and magnesium, \(\text{KMg(SO}_4\text{)}\cdot\text{H}_2\text{O}\). Monoclinic. Granular massive and interbedded with other salts. Cleavage perfect. Fracture even. Brittle, H. 2.5-3. G. 2.2. Luster vitreous. Colorless to white. An evaporite resulting from artificial ponding.

*Tooele County* Salduro; Wendover.

**KAOLINITE**

Hydrous aluminum silicate, \(\text{Al}_2\text{Si}_2\text{O}_5(\text{OH})_2\). Triclinic. Occasionally found in minute, thin, thomtic or hexagonal plates. Claylike masses, either compact or friable. H. 2-2.5. G. 2.6. Cleavage basal. Luster dull to earthy. Color white, often colored by impurities.

*Beaver County* San Francisco district: Horn Silver mine.
*Box Elder County* Lucin district: Copper Mountain, Tecoma Hill mines.
*Cache County* Smithfield area.
*Emery County* San Rafael district: Delta mine.
*Pike County* Marysvale district: White Horse deposit.
*Salt Lake County* Bingham district: Bingham Copper Pit.
*Sevier County* Henry district: Trinity prospect.
*Tooele County* Gold Hill district: Reaper mine; Granite Mountain district; Oquirrh Mountains: Manning Canyon Shale; Stansbury Mountains: Manning Canyon Shale.
*Utah County* Beverly Hills: Manning Canyon Shale; Cedar Valley: East Tintic district; Burbank, Eureka Standard, Larsen Clay pits, North Lily mines, Fox Hills; Jordan Narrows: Orem, Saratoga, Soldiers Pass quadrangles: Lehi district: Manning Canyon Shale; Lake Mountain: Manning Canyon Shale; Thorpe Hills: Manning Canyon Shale; Wasatch Mountains: Manning Canyon Shale.
*Wasatch County* Keetley area.
*Washington County* Mineral Mountain: Beauty Knoll claims: Silver Reef district.

**KASOLITE**

Hydrous lead uranium silicate, \(\text{Pb(UO}_3\text{)}\text{SiO}_4\cdot\text{H}_2\text{O}\). Monoclinic. Crystals small, stout prismatic habit, divergent groups, crusts, and granular masses. Cleavage perfect. Brittle, H. 4.5. G. 5.9. Color ocher yellow to brownish yellow. Luster dull to earthy.

*Pike County* Marysvale district

**KERMESITE**


*Utah County* American Fork district: Bay State mine.

**KIESERITE**

Hydrous magnesium sulfate, \(\text{MgSO}_4\cdot\text{H}_2\text{O}\). Monoclinic. Mostly massive, coarse to fine granular, and intergrown with other salts. H. 3.5. G. 2.6. Colorless, white or yellowish. Luster vitreous. Cleavage good.

*Grand County* Paradox basin.
*San Juan County* Paradox Valley district.
*Tooele County* Salduro; Wendover.
*Utah County* East Tintic district.

**KIMOLITE** (See Cimolite)

**KINOITE**

Hydrous copper calcium silicate, \(\text{Cu}_2\text{Ca}_2\text{Si}_3\text{O}_{10}\cdot2\text{H}_2\text{O}\). Monoclinic. Tabular crystals. Transparent and translucent. H. 5. G. 3.16. Color deep azure blue.

*Beaver County* Rocky district: Bawana mine.

**KLAPROTHITE**

Copper bismuth sulfide, \(\text{Cu}_6\text{Bi}_4\text{S}_9\). Orthorhombic. Prismatic crystals’ Massive. Brittle. H. 2.5. G. 6.01. Luster metallic. Color steel gray. Tarnishes to brass yellow or iridescent.

*Utah County* East Tintic district.

**KOLBECKITE**

Hydrous scandium phosphate, \(\text{ScPO}_4\cdot2\text{H}_2\text{O}\). Orthorhombic. Occurs in altered variscite nodules. Crystals short prismatic, minute. H. 5. G. 2.44. Colorless, yellowish, bright blue to blue-gray. Transparent. Luster vitreous to pearly.

*Utah County* Clay Canyon.

**KORNELITE**

Hydrous ferric sulfate, \(\text{Fe}_5\text{(SO}_4\text{)}_3\cdot7\text{H}_2\text{O}\). Monoclinic. Lath-like and acicular crystals. Also tufted aggregates, crusts, globular masses. G. 2.8. Cleavage good. Luster silky. Color pale rosepink to violet.

*Utah County* East Tintic district: Tintic Standard mine.

**KORNERUPINE**

Hydrous magnesium aluminum boron silicate, \(\text{Mg}_3\text{Al}_2\text{(SiAlB)}_5\text{O}_{21}\cdot(\text{OH})\). Orthorhombic. In fibrous to columnar aggregates. H. 6.5. G. 3.27. Colorless to white,
brown.
San Juan County: Moses Rock dike.

**KRENNERITE**


Utah County: East Tintic district: North Lily, Tintic Standard mines.

**KYANITE**


Box Elder County: Grouse Creek Range: Birch, Southern Conley, Western Grouse Creeks.

Daggett County: Red Creek Complex.

**LABRADORITE**


Juab County: East of Jericho; Keg Mountains.

Millard County: Clear Lake Railroad Station.

Tooele County: Stansbury Mountains: Mack, Muskrat, North Canyons, Salt Mountain.

**LANARKITE**


Utah County: East Tintic district: Burgin mine.

**LEUMONTITE**

Hydrous calcium sodium aluminum silicate, CaAl₂Si₄:O₁₂·4H₂O. Monoclinic. A zeolite. Common crystal form is a prism. Also columnar, radiating and divergent. H. 3-5-4. G. 2.3. Cleavage good. Luster vitreous to pearly. Color white to yellow or gray.

Garfield County: Henry Mountains: Bromide, Oro mines.

LEADMILLITE


Juab County: Tintic district: Eureka Hill mine.

**LEHITE**

Hydrous basic phosphate of sodium, potassium, calcium and aluminum of uncertain formula, perhaps (Na,K)$_2$ Ca₅Al₉(PO₄)₆(OH)$_{12}$·6H₂O. Found as crusts and layers comprised of subparallel aggregates of fibers. H. 5.5. G. 2.9. Color white to gray.

Utah County: Clay Canyon.

**LEPIDOCROCITE**


Wayne County: Fruita: Oyler mine.

**LETTSOMITE** (See CYANOTRICHITE)

**LEUCHTENBERGITE**


Piute County: Mt. Baldy district: Deer Trail mine. Utah County: East Tintic district.

**LEUCOSPHENITE**


Duchesne County: Carter Oil Company wells; Sinclair Mortenson well.

Utah County: Sun Oil Company South Ouray well.

**LEUCOXENE** (See ANATASE)

**LEVERRIERITE**

Hydrous silicate of aluminum. Monoclinic. Occurs in vermicular aggregates. H. 1.5. G. 2.5. Cleavage good...
basal. Colorless to brown.
Salt Lake County Bingham district: Highland Boy, Yampa mines.
Utah County Clay Canyon.

LEWISTONITE

Utah County Clay Canyon.

LIBETHENITE

Hydrous copper phosphate, Cu$_3$(PO$_4$)$_2$·2H$_2$O. Orthorhombic. Short prismatic crystals, also equant. H. 4, G. 3.97. Translucent. Light to dark olive green, also dark green.
Beaver County Star district: Atlas mine.

LIEBIGITE

Hydrous calcium uranium carbonate, Ca$_7$U(CO$_3$)$_4$·10H$_2$O. Orthorhombic. Crystals equant or short prismatic. Most commonly as scaly or granular aggregates, crusts. H. 2.5-3, G. 2.4. Cleavage good. Luster vitreous to pearly. Color pale green to yellowish green. Fluoresces.
Grand County Thompsons district: Black Ape mine.
San Juan County: Big Indian district: Mi Vida mine; Elk Ridge.

LIMONITE

Hydrous basic iron oxide, FeO(OH)·nH$_2$O. Amorphous. Occurs in mammillarly to stalactitic masses, concretionary, nodular, earthy. H. 5-5.5, G. 3-6.4. Luster vitreous, dull to earthy. Color dark brown to black. Streak yellowish brown. May show play of iridescence. Occurs as gossan capping.
Beaver County Beaver Lake district; Bradshaw district: Cave, Hecla mines; Fortuna district: Rocky Hollow; Granite district: Big Pass, Burnt Hollow groups; Lincoln district: Creole, Lincoln, Rattlesnake Iron claims; Newton district: Sheep Rock mine; Pine Grove district: Central Wah Wah Iron deposit, Emma, Iron Duke (Iron Glory or Ruby). Iron Queen, Mooney, Wilson or Last Chance, King Iron prospects; Prew district: Blackbird, Cactus mines, Cactus Gulch; Star district: Commonwealth, Harrington-Hickory, Kemple, Mammoth, Progressive, Rebel, Red Warrior, St. Mary’s, White Rock mines.
Box Elder County Ashbrook district: Vipont mine; Lucin district: Copper Mountain, Cuneesh Tunnel, Jeff-Doran, Tecoma Hill mines; Newfoundland district: Copper Ridge; Promontory district: Lakeview Mining properties; Willard district: Gold Standard mine.
Daggett County Birch Creek deposit; Spring Creek deposit.
Davis County Antelope Island; Farmington district: Parrish Canyon.
Grand County Courthouse Wash; Miners Basin district: Dewey, High Ore, Skylark mines; Little Valley; Salt Valley.
Juab County Desert district; Detroit district: Iron Blossom mine. Fish Springs district: Carnation, Emma, Galena, Utah mines: Thomas Range; Flowide mine; Spring Creek district: Queen of Sheba mine; Tintic district: Black Dragon, Black Jack, Dragon, Empire, Emerald, Grand Central, Iron, Sunbeam mines; West Tintic district: Pyramid, Scotia, Tintic Western, War Eagle mines.
Kane County Kitchen Corral Canyon.
Millard County Antelope Springs; Leamington district: Fool Creek Canyon.
Morgan County Argenta district: Carbonate Hill, Carbonate Gem mines; Hardscrabble district: Norway group.
Piute County Antelope Range; Gold Mountain district: Annie Laurie, Sevier mines: Mt. Baldy district: Deer Trail. Green Eyed Monster mines; Ohio district: Bully Boy and Webster mines; Sevier Canyon.
Salt Lake County Big Cottonwood district: Carbonate, Cardiff mines; Bingham district: Galena, Old Jordan, Highland Boy, Yampa mines; Little Cottonwood district: Alta Consolidated, Cabin, Emma, Flagstaff, Michigan-Utah mines; Smelter district.
San Juan County La Sal Mountains; Monticello district: Copper Queen, Duckett mines.
Sanpete County Ephraim.
Sevier County Henry district: Iron Peaks property; Rock Candy Mountain.
Summit County Park City district: Silver King, Woodside mines.
Tooele County Blue Bell district: Bogan, The Iron mines; Columbia Mining district: Benmore, Sharp, Sultana mines; Deep Creek Mountains: Iron Blowout mine; Dugway district: Bertha, Black Dragon, Bryan, Confidence, Eagle, Four Metals, Kelly’s Hole, Lauris, Metal States, Yellow Jacket mines; East Erickson dis-
district: Copper Jack, Green’s Ridge, Silver Shield mines; Erickson district: Highland Lassie no. 1, Silver Reef mines; Gold Hill district: Alvarado, Buxton, Silver and Gold Mining Company, Unadine mines; Granite Mountain district: Desert, El Dorado, Mountain Queen mines; Mercur district: Mineral Hill mine; Ophir district: Dry Canyon area - Kearseage, Mono, Queen of the Hills mines; Lion Hill area - Buffalo mine; Ophir Hill area - Admiral Dewey, Chicago, Cliff, Hidden Treasure, Sacramento mines; Rush Valley district: Argent, Ben Harrison, Calumet, Galena King, Honerine, Mescatine, Muerbrook, Salvation - Hercules mines.

Utah County: American Fork district: Dutchman, Miller, Pittsburgh mines; East Tintic district: Burgin, Iron King, Tintic Standard mines; Lehi district: Hutchings claim; North Tintic district: Selma mine; Payson district: Nelson, Syndicate mines; Provo district: Monarch mine; Suntacao district: Union Chief mine; Utah district: Alpha, Emerald, Lucky Boy, Queen of the West, Spalding, Trotter mines.

Washington County: Mineral Mountain: Picadilly mine. Tutsagubet district: Apex (Dixie) mine.

Wayne County: Miners Mountain district: Old Faithful, Wonder Copper no. 1 mines; Rabbit Valley: Old Dixon prospect; Torrey: T. R. Lode no. 1 mine. Weber County: Ogden Canyon.

LINARITE


LITHIOPHORITE

Hydrous aluminum lithium manganese oxide, \( (\text{Al, Li})_2 \cdot \text{MnO}_3 \cdot (\text{OH})_2 \). Monoclinic. Occurs as fine scales, also compact, botryoidal. H. 3. G. 3.2. Luster dull to metallic. Color Bluish black. Streak blackish gray.

Grand County: Seven Mile Canyon: Shinarump nos. 1-3 claims. Pine County: Marysvale district: Buddy, Bullion Monarch, Freedom no. 1, Prospector nos. 1 and 3 mines.

LODESTONE (See MAGNETITE)

LORANDITE


Tooele County: Mercur district.

LOUGHLINITE

Hydrous sodium magnesium silicate, \( \text{Na}_2\text{Mg}_3\text{Si}_6\text{O}_{16}\cdot8\text{H}_2\text{O} \). Fibrous structure. Color pearly-white. Luster silky. G. 2.2. Very similar to sepiolite in appearance. Authigenic mineral in the Green River Formation. Duchesne County: Green River Formation.

LUCINITE (See VARISCITE)

LUCKITE (See MELANTERITE)

LUDWIGITE

Magnesium iron borate, \( (\text{Mg, Fe})_2\text{FeBO}_5 \). Orthorhombic. Occurs in finely fibrous masses, felted aggregates. Also sheaf-like aggregates and rosettes of needle-like crystals. H. 5, G. 3, 6. Tough on fracture. Luster silky. Color dark green to greenish black. Streak black to blackish green.

Beaver County: Beaver Lake district: West Spring. Salt Lake County: Big Cottonwood district: Big Cottonwood, Great Western, Mountain Lake, Mountain View mines; Little Cottonwood district: Alta Stock contact zone, Michigan Utah, Hecla mines.

LUZONITE

Copper arsenic sulfide, \( \text{Cu}_3\text{AsS}_4 \). Tetragonal. A dark, reddish, steel-gray mineral with the composition of enargite. Fracture uneven. Streak black. H. 3.4, G. 4.4.

Utah County: East Tintic district: North Lily, Tintic Standard mines.

MAGNESIOARFVEDSONITE

A magnesium amphibole. Occurs as microscopic blue intergrowths on hornblende; and as asbestiform blue aggregates in brown dolomite marlstone. Matted fibrous habit. Color blue, blue gray.

Duchesne County: Avintaquin Canyon: Green River Formation.
Magnesioferrite


Summit County: Park City district; Ontario Tunnel.
Wasatch County: Blue Ledge district; Ontario Tunnel.

Magnesiolumwigtie (See Ludwigite)

Magnesioriebeckite

Hydrous sodium magnesium iron silicate, \(\text{Na}_2\text{Mg}_3\text{Fe}_2\text{Si}_6\text{O}_{22}(\text{OH})_2\). Monoclinic. Crystals long prismatic. Also massive, fibrous, or granular. H. 5. G. 3.0-3.19. Color dark blue to black. Luster vitreous, silky.

Duchesne County: Carter Oil Company wells; Green River Formation; Sinclair Mortenson well.

Magnesite


Beaver County: Antelope district; Beaver Lake district: Beaver Harrison, Copper Mountain, OK, Skylark mines; Bradshaw district: Cave mine; English Springs; Granite district: Burnt Hollow group; Lincoln district: Creole, Lincoln, Rattler Iron claims; McGarry district; Pine Grove district: Pine Grove Associates mine. Pruess district: Blackbird, Cactus mines; Rocky district: Adelia, Bawana, Copper Ranch. Maria. Old Hickory mines; San Francisco district: Imperial mine; Star district: Commonwealth, Hub, Kemple, Lady Bryan, Progressive, St. Mary’s, Wild Bill mines.

Box Elder County: Willard district: Twin Pine claim.

Magnetite


Beaver County: Antelope district; Beaver Lake district: Bat Ridge, Skylark mines; Blue Mountains; Bradshaw district: Cave mine; English Springs; Granite district: Burnt Hollow group; Lincoln district: Creole, Lincoln, Rattler Iron claims; McGarry district; Pine Grove district: Pine Grove Associates mine. Pruess district: Blackbird, Cactus mines; Rocky district: Adelia, Bawana, Copper Ranch. Maria. Old Hickory mines; San Francisco district: Imperial mine; Star district: Commonwealth, Hub, Kemple, Lady Bryan, Progressive, St. Mary’s, Wild Bill mines.

Box Elder County: Willard district: Twin Pine claim.

Wasatch Iron and Gold mine.

Davis County: Antelope Island.

Garfield County: Colorado River district; Henry Mountains: Bromide, Cuprum, Oro mines.

Iron County: Iron Springs district: Granite Mountain, Iron Mountain. Three Peaks (See mine listing under Iron County; Paragonah: Iron Peak; Pinto Iron district.

Juab County: Deseret district: Thomas Range: Bell Hill mine; West Tintic district: Iron King mine. Lockheed Iron property, Tintic Western mine.

Kane County: Colorado River district.


Salt Lake County: Big Cottonwood district: Big Cottonwood, Kentucky-Utah, Mountain Lake, Woodlawn mines; Bingham district: Little Cottonwood district: Alta Consolidated, Alta Stock contact zone, Michigan-Utah, South Hecla mines; Little Cottonwood stock.

San Juan County: La Sal Mountains: Middle Mountain, Brumley Ridge; White Canyon district: Happy Jack mine.

Sevier County: Henry district: Iron Peaks property, Trinity prospect.

Summit County: Park City district.

Tooele County: Dugway district: Buckhorn claim; East Erickson district: Ekker Canyon, Silver Shield mines; Gold Hill district: Alvarado, Centennial and Enterprise, Doctor, Unadine mines.

Utah County: Little Cottonwood stock; Silver Lake district: Deer, Silver Creeks.

Wasatch County: Rhodes Plateau district: Ferry Iron deposit.

Washington County: Bull Valley district: Big Mountain, Emma, Pilot, Redtop claims; Mineral Mountain: Emma, Gregerson, Picadilly mines.

Weber County: Weber district.

Malachite


Beaver County: Antelope district; Beaver Lake district: Beaver Harrison, Copper Mountain, OK, Skylark mines; Bradshaw district: Cave, 2 R’s mine; Granite district: Big Pass, Garnet, King-of-the-Hills groups; Lincoln district: Creole, Lincoln mines; McGarry district; Pruess district: Cactus mine; Rocky district: Adelia, Bawana, Maria mine; San Francisco district: Hom Silver, Imperial mines; Star district: Cedar-Talisman, Commonwealth, Copper King, Dotson, Gold Crown, Harrington-Hickory, Hoosier Boy, Kemple, Progressive, Rebel, Red Warrior,
St. Mary’s, Sundown, White Rock, Wild Bill mines.

Box Elder County
Ashbrook district: Vipont mine; Lucin district: Copper Mountain, Jeff Doran mines; Newfoundland district: Copper Ridge; Promontory district: Lakeview mine; Wallard district: Mormon Girl, Ogden Boilermakers, Overland claims.

Cache County
Hyrum district: Lucky Star Claim; La Plata area: Sundown claim; Paradise district; Richmond district.

Daggett County
Red Creek, Yellow Canary Uranium deposit.

Davis County
Antelope Island; Farmington district: Morning Star group, Parrish Canyon; Wandering Jew mine.

Duchesne County
Rock Creek.

Emery County
Castle Dale; Castle Valley; Emery district; San Rafael district: Copper Globe, Delta mines.

Garfield County

Grand County
Hooeis mine: La Sal district: Bronite, McCoy mines, Miner’s Basin district: Dewey, High Ore, McCormick, Moab no. 1 mines; Salt Valley.

Iron County

Juab County

Kane County
Para Mining Company.

Millard County
Church Hills: Stevens prospect, Detroit district: Almond, Blue Bell, Major Drum mines; Leamington district: Fool Creek Canyon.

Morgan County
Morgan district: Chicago-Utah, Iron King, Morgan Consolidated, Morgan Crescent, Red Eagle mines; Round Valley: Copper Mountain mine.

Piute County
Mt. Baldy district: Clyde, Deer Trail mines; Ohio district: Cascade, Copper Belt, Dalton, Iris, Shamrock, Wedge mines.

Salt Lake County
Big Cottonwood district: Alta Tunnel and Transportation Company, Antelope, Big Cottonwood, Carbonate, Cardiff, Eclipse, Mountain Lake, Price of Wales, Woodlawn mines; Bingham district: Bingham Copper Pit, Butterfield, Columbia, Commercial, Galena, Highland Boy, Midland, Old Jordan, Old Telegraph, U. S. and Lark, Yampa mines; Little Cottonwood district: Emma, Little Emma mines; Smelter district.

San Juan County
Big Indian district: Big Indian Copper mine; Elk Ridge: Notch Nos. 5 and 6, Oakie, Wooden-shoe No. 3 mines; La Sal Mountains; La Sal Quadrangle: Jackpot mine, Lisbon Valley, Climax nos. 1-2, Lisbon Copper mines; Monticello district: Copper Queen, Tuffy Copper mines; Monument Valley district: Oljato, Skyline, Whirlwind mines; Paradox Valley district: Grey Dawn mine, Red Canyon district; San Juan River, White Canyon district; Bell, Four Aces, Fry No. 4, Happy Jack, Hideout, Jonac, Posey mines.

Sevier County
Salina Creek district: Ball, Lead Hill mines, Sevier Canyon.

Summit County
Park City district: Comstock, Daly, Daly-Judge, Daly West, Jupiter, Nail Driver, Ontario, Scottish Chief, Silver King, Silver King Consolidated, Woodside mines.

Tooele County
Deep Creek Mountains: Complex, Devils Pit, Dewey, Eagles Nest, Fortuna, Gold Star, Laura, Monaco, North Pass, Oro del Rey, Overland, Probert, Prosperity, Silver Queen mines; Dutch Mountain; Dugway district: Belcher, Black Maria, Black Dragon, Confidence, Juno, Metal States, Raymond-Bald Eagle mines; East Erickson district: Copper Jack, Jessel Bezzel, Silver Shield mines; Erickson district: Highland Lassie no. 1 mine; Gold Hill district: Alvarado, Calaveras, Centennial, Copperopolis, Enterprise, Copper Bloom, Copper Hill, Copper Queen-Midland Mining Company, Doctor, Frankie, Garrison Monster, Gold Bond, Gold Hill (U. S.), Ida Lull, Lucy L, Minnehaha, Monaco, Napoleon, New Baltimore, Ozark, Pole Star Copper Company, Rea, Silver King, Unadine, Victory no. 1, Yellow Hammer mines; Granite Mountain district: Blue Bell, Cannon Tank Canyon, Desert, El Dorado, Mountain Queen mines; Grantsville district; Geyee district; Mercur district: Mineral Hill mine; Ophir district: Dry Canyon area - Brooklyn, Kearsarge, Mono, Queen of the Hills mines; Foothill area - Lakes of Killarney mine, Lion Hill area - Buffalo mine, Chloride Point; Ophir Hill area - Chicago, Clift, Hidden Treasure, Sacramento mines; Rush Valley district: Ben Harrison, Calumet, Galena, Honeorine, Muerbrook, Salvation Hercules, Southport mines; Silver Island district: Carrie Mack property; Tooele district; Willow Springs district.

Utah County
Brown Park area; Brush Creek district: Little Alta mine; Bullionville; Carbonate district: Dyer, Jessie Ewing mines, Red, Willow Creeks; Little Split Mountain; Uteland Knoll district: Ouray.

Utah County
American Fork district: Miller mine; East Tintic district: Apex Standard mine, Eureka Bullion, Eureka Lily, Eureka Standard, Tintic Standard, Trixie mines; Sataquin district: Black Balsam, Copper Bullion, Sally Ann mines; Thorpe Hills.

Washington County
Mineral Mountain: Emma, Gregerson mines; Silver Reef district: Buckeye, East Reef, Emily Jane, Maud, Requa mines; Tuttasubet district:
Apex (Dixie), Paymaster mines.

Beaver County: Capitol Wash: Capitol Wash to Sheets Gulch; Grand Wash to Capitol Wash: Miners Mountain district: Old Faithful, Wonder Copper no. 1 mines; Torrey: T. R. Lode no. 1 mine.

Weber County: Cold Water Canyon; Sierra Madre district: Eldorado, King Solomon mines; Weber district: New Azurite, Standard Mining Company mines.

MALLARDITE


Salt Lake County Bingham district: Lucky Boy mine.

MANGANITE


Beaver County San Francisco district: Sundown mine.

Emery County: Muddy River.

Grand County Little Grand district: Needles, Salt Wash group.

Juab County Tintic district: Victoria mine.

Millard County: Detroit district: Black Diamond, Guy, Last Chance, Martha, Silica Plug mines.

San Juan County Elk Ridge: North 1 and 4 mines; White Canyon district: Happy Jack mine.

Sanpete County Dry Canyon.

Utah County East Tintic district: Burgin, Eureka Standard, Tintic Standard mines.

MARTITE (See HEMATITE)

MASSICOT


Salt Lake County Bingham district; Little Cottonwood district: Emma mine.

Summit County Park City district.

Utah County East Tintic district: Burgin mine.

MATILDITE


Utah County East Tintic district.

MEERSCHAUM (See SEPIOLITE)

MELAONITE (See TENORITE)

MELANOVANADITE


Grand County Thompsons district: Juniper mine.

San Juan County La Sal Quadrangle: Black Hat mine;
Paradox Valley district: Grey Dawn, Vanadium Queen mines.

MELANTERITE


Emery County: San Rafael district: Dexter group.
Juab County: Tintic district: Swansea mines.
Salt Lake County: Bingham district: Lucky Boy mine.
Tooele County: Mercury district: Brickyard mine; Ophir district: Ophir Hill area- Ophir Hill Consolidated; Ophir Coalition mines; Rush Valley district: Muermbrook mine.
Utah County: East Tintic district: Burgin mine.

MERCURY


Iron County: Gold Springs district: Homestake mine; State Line district.
Salt Lake County: Bingham district.

MESOLITE


Salt Lake County: Little Cottonwood district.

META-ALUMINITE


Emery County: San Rafael district: Temple Mountain, Fuernrol No. 2 mine.

META-AUTUNITE


Emery County: San Rafael district: Delta mine, Wild Horse Canyon.

Grand County: Poison Spring Canyon; Thompsons district: Thom claim.
Piute County: Marysvale district: Freedom no. 2, La Vita, Papsy’s Hope mines.
San Juan County: Elk Ridge: Notch Nos. 1 and 4 mines; White Canyon district: Posey mine.
Sevier County: Henry district: La Veta prospect.

METACINNABAR


Piute County: Marysvale district: Quicksilver mine.
Tooele County: Grantsville district: Temple Valley, Ruby Crystal mine.

METAHEWETTITE


Emery County: San Rafael district: Temple Rock, South Temple Wash, Vagabond mine.
Garfield County: Henry Mountains: Crescent Creek.
Grand County: Pack Creek; Thompsons area; Thompsons district: Cactus Rat mines; Yellow Cat district: Yellow Cat group.
San Juan County: Paradox Valley district: Grey Dawn mine.

METAROSSITE

Hydrous calcium vanadate, CaV₇O₁₆·9H₂O. Triclinic. G. 2.45. A dehydration product from rossite. Found as platy to flaky masses and veinlets, which are soft and friable. Luster dull to pearly. Color light yellow. H. soft.

Grand County: Thompsons area; Thompsons district: Parco no. 23 mine.
San Juan County: Monticello district: Brushy Basin, Spring Creek.
Wayne County: Coleman Canyon to Oak Creek.

METASTIBNITE


Summit County: Park City district: Silver King, Woodside mines.
METASTRENGITE
Iron County: Iron Spring district: Iron Mountain, Blow-out Hill.

METATORBERNITE
Hydrous copper uranium phosphate, Cu(UO₂)₃(PO₄)₂·8H₂O. Tetragonal. In tabular crystals, often in rosettes or sheaf-like aggregates. H. 2. 5. G. 3. 6. Cleavage basal perfect. Brittle. Luster vitreous to pearly. Color pale green to dark green.
Beaver County: Pine Grove district: Staats (Monarch) mine.
Emery County: Green River district: Mineral Ten claim; San Rafael district: Delta. Dirty Devil mines, Flat Top Mesa, Temple Mountain, South Temple Wash.
Juab County: Honeycomb Hills.

METAYUYAMUNITE
Emery County: San Rafael district: Consolidated, Delta, Dexter group. Fuemrol no. 2, Green Vein Mesa, Green Vein no. 5, Original Green Vein mines. Pay Day, Vagabond mines.
San Juan County: Elko Ridge: Notch Nos. 5 and 6, Sandy No. 3 mines; Red Canyon district: Markey no.3 mine; White Canyon district: Happy Jack, Jomac, W. N. mines.

META-URANOCIRCITE
Juab County: Honeycomb Hills.

METAVARISCITE
Box Elder County: Utahlite Hill.

METAZEUNERITE
San Juan County: San Rafael district: Consolidated, Delta, Dexter group. Fuemrol no. 2, Green Vein Mesa, Green Vein no. 5, Original Green Vein mines. Pay Day, Vagabond mines.

MIARGYRITE
Utah County: East Tintic district.

MICROCLINE
Mine.

**Sevier County** Henry district: Trinity prospect.

**Tooele County** Granite Mountain district.

**Utah County** Little Cottonwood stock.

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**MILLISITE**

Hydrous basic phosphate of sodium, calcium, and aluminum, \((\text{Na,K})\text{CaAl}_6\text{(PO}_4\text{)}_2\text{(OH)}_6\cdot3\text{H}_2\text{O}\). Probably tetragonal. Occurs as chalcoclastic crusts or spherules with fibrous structure. H: 5.5. G: 2.8. Cleavage good.

Color white to light gray.

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**MINIMUM**

Lead oxide, \(\text{Pb}_3\text{O}_4\). Tetragonal. Found only massive, earthy, or pulverulent; in microscopic crystalline scales. H: 2.5. G: 9.1. Color scarlet-red or brownish red. Luster greasy or dull, streak orange-yellow.

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**MIRABELITE**

Hydrous sodium sulfate, \(\text{Na}_2\text{SO}_4\cdot10\text{H}_2\text{O}\). Monoclinic. Crystals short prismatic, resemble borax. Also massive as crusts, granular, stalactitic. H: 1.2. G: 1.5. Cleavage good. Fracture conchoidal. Luster vitreous. Colorless to white.

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**MIXITE**

Hydrous basic copper bismuth arsenate, \(\text{Cu}_2\text{Bi}_2\text{(AsO}_4\text{)}_3\cdot\text{OH}_2\cdot6\text{H}_2\text{O}\). Hexagonal. In hair-like crystals, tufted groups, or incrusting. Also compact, in reniform masses. H: 3-4. G: 3.8. Luster dull. Color emerald-green to bluish green, pale green or white. Streak lighter than color.

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**MOLYBDENITE**


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**MONAZITE**

Phosphate of the cerium metals, \((\text{Ce,La,Y,\text{Th}})\text{(PO}_4\text{)}_3\). Monoclinic. Crystals flattened, elongated, sometimes prismatic. H: 5-5.5. G: 4.6-5.4. Cleavage good. Fracture uneven. Brittle. Luster variable, resinous, waxy, vitreous. Color yellowish or reddish brown to brown, also shades of yellow, greenish, and nearly white. Opaque.

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**MOLYBDITE** (See FERRIMOLYBDITE)

**MONAZITE**

Phosphate of the cerium metals, \((\text{Ce,La,Y,\text{Th}})\text{(PO}_4\text{)}_3\). Monoclinic. Crystals flattened, elongated, sometimes prismatic. H: 5-5.5. G: 4.6-5.4. Cleavage good. Fracture uneven. Brittle. Luster variable, resinous, waxy, vitreous. Color yellowish or reddish brown to brown, also shades of yellow, greenish, and nearly white. Opaque.

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**MOLYBDITE** (See FERRIMOLYBDITE)

Kane County: Kaiparowits Plateau: Rees Canyon, Croton Canyon, and Sunday Canyon, fossil placers in Straight Cliffs Sandstone.

Morgan County: Arthur Fork.

Sevier County: Monroe Canyon.

Tooele County: East Erickson district: South Pine Canyon.

Uintah County: Jenson.

Wayne County: Caineville.

MONHEIMITE (See SMITHSONITE)

MONIMOLITE

Lead calcium antimonate, (Pb,Ca)3Sb2O8. Isometric. Octahedral and rare cubic crystals. \(H = \frac{4}{5}-6\). G. 5.9-7.3. Luster greasy to adamantine. Color yellow, gray-green, dark brown.

Tooele County: Gold Hill district: U. S. Mine.

MONTGOMERYITE

Hydrous basic calcium aluminum phosphate, \(Ca_2Al_2(PO_4)_3(OH)\cdot7H_2O\). Monoclinic. Laths flattened and elongated. \(H = \frac{4}{5}-G. 2.5\). Cleavage good. Color usually deep green, rarely pale green to colorless. Luster vitreous.

Utah County: Clay Canyon.

MONTICELLITE

Calcium magnesium silicate, \(CaMgSiO_4\). Orthorhombic. Occurs in small prismatic crystals or grains. \(H = 5\). G. 3.2. Colorless to gray.

Salt Lake County: Little Cottonwood district: Clayton Peak stock contact zone.

Utah County: American Fork district.

MONTMORILLONITE

Hydrous magnesium alumino silicate, \((Na, Ca)\cdot33\cdot(Al,Mg)Si_2O_5(OH)\cdotnH_2O\). Monoclinic. A member of the smectite group. A clay mineral. Occurs massive, claylike. \(H = 1-1.5\). G. 2.5. Luster feeble. Color white, grayish, rose-red, bluish.

Garfield County: Cannonville: Henry Mountains: Crescent Creek; Henrieville; Tropic.

Grand County: Wilson Mesa district.

Iron County: Escalante district: Escalante mine.

Juab County: Honeycomb Hills; Thomas Range; Spor Mountain, Bell Hill, Blowout, Blue Chalk, Dell no. 5, Eagle Rock, Floride no. 5, Fluorine Queen, Green Crystal, Hogsback, Northend, Rainbow, Roadside mines.

Piute County: Marysvale district.

Salt Lake County: Bingham district: U. S. and Lark mine.

Sevier County: Aurora, Henry district: Trinity prospect, Redmond, Rock Candy Mountain.

Summit County: Park City district: Daly, Ontario mines.

Utah County: East Tintic district: North Lilly mine; Fox Hills.

Wasatch County: Keetley area.

Washington County: Silver Reef district.

MONTROSEITE


Emery County: San Rafael district: Cadyx, Temple Mountain, Rex no. 2 mines.

Grand County: Thompsons district: Juniper, Parco no. 23 mines.

San Juan County: Big Indian district: Big Buck, Cal Uranium, Homestake, La Sal, Mi Vida, Radon, Rattlesnake mines; La Sal Quadrangle: Black Hat, Firefly-Pignay, Little Peter, Valley View, Yellow Bird mines; Paradox Valley district: Grey Dawn, Vanadium Queen mines.

MORDENITE

Hydrous calcium sodium potassium aluminum silicate, \((Ca,Na,K,Al_2Si_2O_7(OH))\cdot5H_2O\). Monoclinic. Found in minute crystals. Also in hemispherical or reniform concretions with fibrous structure. \(H = 3-4\). G. 2.2. Cleavage good. Color white, yellowish, pinkish. A zeolite.

Piute County: Marysvale district: Quicksilver mine.

Utah County: East Tintic district.

MORGANITE (See BERYL)

MUSCOVITE

Essentially \(KAl_2(AlSi_3O_10)(OH)_2\). Monoclinic. Crystals tabular, may resemble orthorhombic or hexagonal symmetry. Foliated, in scales, cryptocrystalline, compact massive. \(H = 2-2.5\). G. 2.7-3.1. Cleavage perfect basal. Folia flexible and elastic. Luster vitreous, silky, pearly. Transparent and colorless in thin sheets. Thicker sheets may be yellow, brown, green, or red.

Beaver County: Beaver Lake district: Skylark mine.
Star district: Hub. Lady Bryan. Moscow mines; Newton district: Sheep Rock mine; Rocky district: Copper Ranch mine.

Box Elder County: Ashbrook district: Vipont mine; Lucin district: Tecoma Hill mines; Rosebud district; Willard district: Mormon Girl claim.

Daggett County: Red Creek Complex.

Juab County: Goshute Indian Reservation; House Range: Painter Springs; Spring Creek district: Queen of Sheba mine.

Piute County: Marysvale district.

Salt Lake County: Big Cottonwood district: Mountain Lake mine; Bingham district: Bingham Copper pit; Little Cottonwood stock.

Sevier County: Henry district: Trinity prospect.

Summit County: Park City district: Daly-Judge, Silver King, Silver King Consolidated, Woodside mines.

Tooele County: Gold Hill district: Yellow Hammer mine; Granite Mountain district; Ophir district: Lion Hill area; Ophir Hill area - Ophir Hill Consolidated, Ophir Coalition mines.

Utah County: American Fork district: Pittsburgh mine; East Tintic district.

Wasatch County: Bonanza Flat; Snake Creek district. Washington County: Silver Reef district.

MOTTRAMITE

Iron County: Escalante district: Escalante mine.

NAHCOLITE

Duchesne County: Carter Oil Company wells; Green River Formation: Sinclair Mortenson well.

Uintah County: Sun Oil Company South Ouray well.

NATROALUNITE

Piute County: Marysvale district: Al Kee-Mee prospect.

NATROJAROSITE

NATROLITE

Tooele County: Rush Valley district.

NATRON

Tooele County: Deep Creek Valley.

NAVAJOITE

San Juan County: Monument Valley district: Mitten no. 1 mine.

NEIGHBORITE

Uintah County: Sun Oil Company South Ouray well.

NATROALUNITE

NATROJAROSITE

NATROLITE

Tooele County: Rush Valley district.

NATRON

Tooele County: Deep Creek Valley.

NAVAJOITE

San Juan County: Monument Valley district: Mitten no. 1 mine.

NEIGHBORITE

Uintah County: Sun Oil Company South Ouray well.

**Tooele County**: Sheep Ridge.

**NISCOLITE**


**Emery County**: San Rafael district: Lucky Strike mine.

**NIGRITE** (See ASPHALTUM)

**NITER**

Potassium nitrate, \(\text{KNO}_3\). Orthorhombic. Mostly found in crusts, silky tufts. Also massive, granular, earthy or mealy. G. 2. G. 2. 1. Cleavage good. Fracture uneven. Brittle. Luster vitreous. Colorless to white, may be tinted. Transparent. Saline taste. 

**Iron County**: Near Parowan. 
**Millard County**: Near Fillmore.

**NOLANITE**


**San Juan County**: Paradox Valley district: Vanadium Queen mine.

**NONTRONITE**

Hydrous iron aluminum silicate, \(\text{Na}_0.33\text{Fe}_2(\text{Al},\text{Si})_4\text{O}_{10}(\text{OH})_2\cdot\text{nH}_2\text{O}\). A member of the smectite group. Monoclinic. A clay mineral. Compact, massive; has opal-like appearance. Earthy. H. 1-1.5. G. 2. 5. Fragile. Color yellow, greenish-yellow. 

**Salt Lake County**: Bingham district: Bingham Copper Pit. 
**Tooele County**: Gold Hill district: Gold Hill (U. S.), Unadine mines; Rush Valley district: Honerine mine. 
**Utah County**: East Tintic district.

**NORSTRANDITE**

Aluminum trihydroxide. \(\text{Al(OH)}_3\). Monoclinic. Occurs as thick tabular crystals; also as aggregates. H. 3. G. 2.4. Colorless to coral pink, to reddish brown. 

**Duchesne County**: Green River Formation. 
**Uintah County**: Green River Formation.

**NORTHUPITE**

Sodium magnesium chloride-carbonate, \(\text{Na}_2\text{MgCl}_2(\text{CO}_3)_2\). Isometric. Found as tiny octahedral crystals. Fracture conchoidal. Brittle. H. 3. 5-4. G. 2. 4. Luster vitreous. Colorless: also pale yellow, gray, or brown. Transparent. Found in the Green River Formation. 

**Duchesne County**: Green River Formation.

**NOSELITE**

Sodium aluminum sulfate silicate, \(\text{Na}_2\text{Al}_3\text{Si}_2\text{O}_{12}\cdot\text{SO}_4\). Isometric. Crystals are rare; commonly massive, in imbedded grains. H. 5. 5. G. 2. 3. Color gray, blue, brown. Luster vitreous. Transparent to translucent. 

**San Juan County**: La Sal Mountains: Middle Mountain, Brumley Ridge.

**NOVACEKITE**

Hydrous magnesium uraninate arsenate, \(\text{Mg}(\text{UO}_2)_2(\text{AsO}_4)_2\cdot12\text{H}_2\text{O}\). Tetragonal. Crystals rectangular plates. Occurs as crusts of interlocking aggregates. H. 2.7. G. 3. 7. Color pale yellow, yellow. 

**San Juan County**: Paradox Valley district: Grey Dawn mine.

**NSUTITE**


**Utah County**: East Tintic district: Burgin mine.

**OBSIDIAN**


**Box Elder County**: Promontory district: Lakeview Mining properties. 
**Juab County**: Keg Mountains. 
**Millard County**: Black Rock; White Mountain. 
**Piute County**: Marysvale district.

**OCTAHEDRITE** (See ANATASE)

**OKENITE**

Basic hydrous calcium silicate, \( \text{H}_2\text{CaSi}_2\text{O}_5\cdot\text{H}_2\text{O} \). Triclinic. A zeolite. Occurs in minute blade-shaped crystals. Commonly fibrous; also compact. Cleavage perfect. H. 4.5-5. G. 2.3. Color white, with a shade of yellow or blue.

Salt Lake County: Bingham district: Bingham Copper Pit.
Utah County: East Tintic district.

OLIGoclase


Davis County: Antelope Island.
Grand County: La Sal Mountains, North Mountain.
Millard County: House Range, Notch Peak intrusive.
Tooele County: Gold Hill district: Alvarado mine.

OLIVEnite


Juab County: Tintic district: Carissa, Gold Chain, Mammoth, Ophohoga mines; West Tintic district: Scotia mine.
Summit County: Park City district: Silver King, Woodside mines.
Tooele County: Gold Hill district: Gold Hill (U. S.), Pole Star Copper Company mines.
Utah County: East Tintic district.

OLIVine


Beaver County: San Francisco district.
Tooele County: Southern Oquirrh Mountains: Stansbury Mountains: Mack, Muskrat, North Willow Canyons, Salt Mountain.
Utah County: American Fork district: Deer, Silver Creeks, Fox Hills.

ONOfRite


Piute County: Marysvale district: Quicksilver mine.
Mammoth, Opohonga mines; West Tintic district: Scotia mine.

ONyx (See CALCite)

OPal

Hydrous silica, \( \text{SiO}_2\cdot\text{nH}_2\text{O} \). Amorphous. Massive; often botryoidal, stalactitic, or earthy. H. 5-6. G. 1.9-2.2. Conchoidal fracture. Luster vitreous to resinous. Colorless, white, pale shades of yellow, red, brown, green, gray, blue. Often has a milky or opalescent appearance, and may display a fine play of colors.

Beaver County: Beaver; Lincoln district: Creole mine; Milford; San Francisco district: Horn Silver mine; Southern San Francisco Mountains: Brimstone Mound.
Daggett County: Red Creek: Yellow Canary uranium deposit.

Iron County: Cima mine.
Juab County: San Pitch Mountains: Orme property; Thomas Range: Autunite no. 8, Buena no. 1 claims, Nonella prospect, Topaz Mountain.
Piute County: Marysvale district: J. and L. Alunite mine, Silica Hills.
Salt Lake County: Bingham district: Galena, Old Jordan mines.
Sevier County: Fish Lake.
Tooele County: Gold Hill district: Alvarado, Gold Hill (U. S.), Monoco, Unadine mines.

ORpiment


Box Elder County: Ashbrook district: Vipont mine.
Emery County: San Rafael district: Camp Bird No. 7, Fuemrol no. 2 mine.
Garfield County: Coyote Creek district: Hampton mine.
Salt Lake County: Bingham district: Butterfield Canyon.
Tooele County: Mercury district: Brickyard, Golden Gate, Hillside, Mercur, Sacramento, Sunshine mines.
Washington County: Bull Valley district: Pilot claims.
ORTHITE (See ALLANITE)

ORTHOCLASE


Beaver County: Pruess district; Blackbird group, Cactus mine; Rock Corral.

Iron County: Escalante district: Escalante mine; Gold Springs district; Actaa, Homestake, Independence, Jennie, Jumbo, Little Buck, Snowflake mines; Stateline district: Creole, Gold Dome, Johnny, Oft, Phelps, Utah Spur mines.

Juab County: Goshute Indian Reservation; Spring Creek district: Queen of Sheba mine; Thomas Range: Autunite no. 8, Evening Star prospects, Topaz Mountain.

Millard County: House Range: Notch Peak intrusive, Painter Springs.

Pute County: Gold Mountain district: Sevier mine; Marysville district; Ohio district: Wedge mine.

Salt Lake Country: North Cottonwood Canyon: Big Cottonwood Canyon; Big Cottonwood district; Little Cottonwood district: Little Cottonwood stock.

San Juan County: La Sal Mountains: Middle Mountain, Brumley Ridge.

Sevier County: Henry district: Trinity prospect.

Tooele County: Gold Hill district: Rodenhouse Wash, Wilson Consolidated, Yellow Hammer mines; Granite Mountain district: Ophir district: Ophir Hill area — Ophir Hill Consolidated, Ophir Coalition mines.

Utah County: Alpine district; Little Cottonwood stock.

OSARIZAWAITE


Millard County: Church Hills: Stevens prospect.

OVERITE


Utah County: Clay Canyon.

OSOCERITE

Mineral wax. Wax-like in appearance and consistency. Colorless to white when pure; often pale green, yellowish, brownish yellow, brown. Occurs in veins and fillings in brecciated zones.

Carbon County: Whitmore Canyon.

Utah County: Colton: Higgins, James Peak (Brown Bear), Kyune Canyon, Midnight, Miller, Pleasant Valley, Thomas Ranch, Town mines.

Wasatch County: Soldier Summit: Culmer Brothers, Soldier Summit, U.S. mines.

PALIGORSKITE

Hydrous magnesium aluminum silicate, (Mg,Al)_{n}(Si_4O_10)(OH)_n. Monoclinic. H. soft. G. 2.5. Commonly known as mountain leather from its leather-like appearance.

Tooele County: Ophir district: Dry Canyon area: Deseret mine.

PALLADIUM


Salt Lake County: Bingham district: Bingham Copper Pit.

PARABUTLERITE


Emery County: San Rafael district: Calf Mesa, Dexter group.

PARAMONTROSEITE

Vanadium oxide, VO_2. Orthorhombic. G. 4.0. In part or wholly pseudomorphic after montroseite. Metastable, and alteration product.

Emery County: San Rafael district: Rex no. 2 mine.

Grand County: Thompsons district: Juniper mine.

San Juan County: Big Indian district: Cal Uranium, Homestake, Mi Vida mines; Paradox Valley district: Vanadium Queen mine.

PARGASITE

_Utah County_ East Tintic district.

**PASCOITE**

Hydrous calcium vanadate, Ca$_2$V$_6$O$_{17}$.3H$_2$O. Triclinic. Occurs as granular crusts which rarely show minute lath-like crystals. H. 2.5. G. 2.5. Cleavage distinct. Fracture conchoidal. Luster vitreous. Color dark red-orange to yellow-orange. Streak cadmium yellow.

_Emery County_ San Rafael district: Calyx mine; Temple Mountain.

_Garfield County_ Crescent Creek.

_Grand County_ Thompsons district: Black Ape mine.

_San Juan County_ Big Indian district: Mi Vida mine.

_La Sal Quadrangle_ Little Peter mine; Montezuma Canyon: West Cliff House No. 8 mine.

**PEARCEITE**


_Box Elder County_ Ashbrook district: Vipont mine.

_Juab County_ Tintic district: Bullion Beck; Gemini mines.

_Utah County_ East Tintic district: North Lily mine.

_Tintic Standard mine.

**PENNINE** (See PENNINITE)

**PENNINITE**


_Piute County_ Marysvale district.

_Sevier County_ Henry district: Trinity prospect.

_Utah County_ East Tintic district.

_Wasatch County_ Snake Creek district.

**PERICLASE**


_Salt Lake County_ Big Cottonwood district: Big Cottonwood, Mountain Lake mines; Little Cottonwood district: Clayton Peak Stock contact zone.

_Utah County_ Silver Lake district: Deer; Silver Creeks.

_Washington County_ Mineral Mountain: Emma mine.

**PETRIFIED WOOD**

(See CRYPTOCRYSTALLINE QUARTZ)

**PETZITE**


_Utah County_ East Tintic district: Eureka Lily, Eureka Standard, North Lily, Tintic Standard mines.

**PHARMACOSIDERITE**


_Juab County_ Tintic district: Gold Chain, Mammoth mines; West Tintic district: Scotia mine.

_Toele County_ Gold Hill district: Gold Hill (Western Utah) mine; Mercut district.

**PHILLIPSITE**


_Toele County_ Rush Valley district.

**PHLOGOPITE**


_Salt Lake County_ Little Cottonwood district: Clayton Peak Stock contact zone.

_Sevier County_ Henry district: Trinity prospect.

_Toele County_ Ophir district: Ophir Hill area - Ophir Hill Consolidated; Ophir Coalition mines.

_Wasatch County_ Snake Creek district.
PHOSGENITE


Juab County: Tintic district; Eureka Hill mine.

PHOSPHORITE

Phosphate rock, of variable composition. Essentially a carbonate fluorapatite in calcareous rocks, and an aluminum phosphate in clay shales. Mississippian phosphate shales are located in Ogden Canyon, Laketown Canyon, and in the East Tintic Mountains. The Permian Phosphoria Formation occurs in northern and northeastern Utah.

Daggett County: Uinta Mountains.
Duchesne County: Uinta Mountains.
Juab County: East Tintic Mountains in basal Deseret Limestone.
Rich County: Crawford Mountains; Lakeview Canyon; Woodruff Creek.
Salt Lake County: Dry Canyon.
Summit County: Franson Canyon; Park City district.
Utah County: Spanish Fork Canyon; Little Diamond Fork.
Wasatch County: Midway: Uinta Mountains.
Weber County: Ogden Canyon.

PHOSPHURANYLITE

Hydrous basic calcium uranium phosphate, $\text{Ca}_2\text{UO}_2\left(\text{PO}_4\right)_{3-}\cdot(\text{OH})_{3}\cdot 7\text{H}_2\text{O}$. Orthorhombic. Found as thin coatings or aggregates that appear dense, earthy, or minutely scaly. Cleavage perfect. H. 2. 5. G. 4. 1. Color deep golden yellow to rich yellow. Not fluorescent.

Emery County: San Rafael district: Fumrol no. 2 mine.
Juab County: Tintic district: Carissa mine.

PITCHBLENDE (See URANINITE)

Massive or coloform uraninite.

PITICITE

Hydrous iron copper zinc sulfate, $(\text{Fe,Cu,Zn})\text{SO}_4\cdot 7\text{H}_2\text{O}$. Monoclinic. Equant to short prismatic crystals. Usually in stalactitic or concretionary forms, crusts, massive. H. 2. G. 1. 9. Cleavage basal perfect. Luster vitreous. Color various shades of green, blue. Taste sweet, metallic, astringent.

Salt Lake County: Bingham district: Galena, Old Jordan mines.
Utah County: East Tintic district.

PITCHBLONDE (See URANINITE)

Massive or coloform uraninite.

PITTICITE

Hydrous iron zinc oxide, $\text{Fe}_2\left(\text{AsO}_4\right)\left(\text{SO}_4\right)(\text{OH})\cdot \text{nH}_2\text{O}$. Massive, reniform or stalactitic, and as coatings. H. 3. G. 2. 4. Brittle. Fracture earthy to conchoidal. Luster dull to vitreous. Color yellowish, brownish, reddish.

Emery County: San Rafael district: Fumrol no. 2 mine.
Juab County: Tintic district: Carissa mine.

PLAGIOCLASE

(See ALBITE, OLIGOCLASE, ANDESINE, LABRADORITE, ANORTHITE)

PLANCHEITE

Hydrous copper silicate, $\text{Cu}_6(\text{Si}_4\text{O}_{11})_2(\text{OH})_4\cdot \text{H}_2\text{O}$. Orthorhombic. Fibrous, often mammillarv. H. 5. 5. G. 3. 3. Color blue.

Beaver County: Beaver Lake district on east side of Beaver Lake Mountains.
PLATINUM


Garfield County: Hite in placers.
Salt Lake County: Bingham district: Bingham Copper Pit.

PLEONASTE (See HERCYNITE)

PLUMBOJAROSITE


Beaver County: San Francisco district: Horn Silver mine; Star district: Hub, Moscow, Red Warrior mines.
Box Elder County: Lucin district: Tecoma Hill mines.
Juab County: Fish Springs district: Carnation, Emma, Galena, Utah mines.
Piute County: Mt. Baldy district: Deer Trail mine.
Salt Lake County: Big Cottonwood district: Cardiff mine; Little Cottonwood district: Cabin, Flagstaff, South Hecla mines.
Tooele County: Deep Creek Mountains: Devils Pit, Eagles Nest, Midland, Monroe, Oro del Rey mines.
Gold Hill district: Boston, Copper Queen-Midland Mining Company, Cyclone, Garrison Monster, Gold Hill Standard, Monroe, New Baltimore, Red Jacket, Rube, Shay, Silver King, Success mines; Ophir district: Dry Canyon area - Kearsarge mine; Lion Hill area - Buffalo mine, Chloride Point, Douglas, Lion, Zella, Empire, East Side, Iron Monarch, Northern Light, Woodruff mines; Ophir Hill area - Cliff, Hidden Treasure, Sacramento mines; Rush Valley district: Argent, Ben Harrison, Galena King, Honerine, Mescatine, Muerbrook, Salvation - Hercules mines.
Utah County: American Fork district: Miller, Pittsburg mines; East Tintic district: Eureka Lily, North Lily, Tintic Standard, Trixie mines.
Washington County: Tintagel district: Apex, Paymaster mines.

POWELLITE


Beaver County: Beaver Lake district: Beaver-Harrison, OK mines.
Salt Lake County: Big Cottonwood district: Tungsten Tunnel mine.
Tooele County: Gold Hill district: Yellow Hammer mine.

PREHNITE


Salt Lake County: Little Cottonwood district.
Utah County: Silver Lake district: Deer, Silver Creeks.
PROCHLORITE


Sevier County
Henry district: Trinity prospect.

PROSOPITE


Tooele County
Dugway district: Buckhorn claim; Wild Cat Mountains: Silver Queen mine.

PROUSTITE


Beaver County
San Francisco district: Horn Silver mine.

Box Elder County
Ashbrook district: Vipont mine.

Juab County
Tintic district: Chief Consolidated mine.

Tooele County
Ophir district: Ophir Hill area - Jim Fisk mine.

Utah County
East Tintic district: Eureka Lily, Eureka Standard, Trixie mines.

PSEUDOBROOKITE


Juab County
Thomas Range: Topaz Mountain.

PSEUDOWAVELLITE (See CRANDALLITE)

PSILONOMELANE


Emery County
Cedar Mountain district: Muddy River.

Grand County
Little Grand district: Tenmile Wash; Salt Valley.

Juab County

San Juan County
White Canyon district: Happy Jack mine.

Summit County
Beaver Canyon.

Tooele County
Erickson district: Huber-Rydalch mine; Mercur district: Ophir district: Ophir Hill area - Ophir Hill Consolidated. Ophir Coalition mines.

Utah County
East Tintic district: Tintic Standard mine; North Tintic district: Oxen mine, Tip Top Tunnel; Silver Lake district: Deer Creek; Utah district: Alpha, Emerald, Lucky Boy, Queen of the West, Spalding, Trotter mines.

Weber County
Weber district: Payday claims.

PTILOLITE


Garfield County
Coyote.

Piute County
Marysville district.

PYRARGYRITE


Beaver County
San Francisco district: Horn Silver mine.

Box Elder County
Ashbrook district: Vipont mine.

Juab County
Tintic district: Chief Consolidated mine.

Salt Lake County
Bingham district: Tiewaukee, Wirr-Wick, Dixon mines.

Summit County
Park City district: Park City Consolidated mine.

Tooele County
Ophir district: Ophir Hill area - Jim Fisk mine.

Utah County
East Tintic district: Apex Standard mine.

PYRITE

Beaver County: Beaver Lake district: Beaver-Harrison. OK. Skylark mines; Bradshaw district: Cave, Hecla, Nip and Tuck mines; Fortuna district: Rocky Hollow; Gordon district: Sulphurdale; Granite district: Big Pass, Bismuth, Molly mines; Lincoln district: Creole, Lincoln mines; Newton district: Indian Creek, Rob Roy, Sheep Rock mines; Pine Grove district: Pruss district: Blackbird, Cactus, Gold Reef mines; Rocky district: Old Hickory mine; San Francisco district: Beaver Carbonate, Cupric. Horn Silver. King David, Michigan. Washington mines; Star district: Commonwealth Harrington-Hickory. Hub, Kemple, Lady Bryant, Moscow, Progress, Red Warrior, St. Mary's, White Rock, Wild Bill Woodhouse mines.

Box Elder County: Ashbrook district: Vipont mine; Lucin district: Tecoma Hill mines; Newfoundland district: Copper Ridge mine: North shore of Great Salt Lake; Park Valley district: Promontory district: Lakeview Mining properties; Rosebud district: Red Buttes, Willard district: Overland claim.

Davis County: Farmington district: Morning Star group, Parrish Canyon.

Duchesne County: Green River Formation.

Emery County: San Rafael district: Calyx, Dexter Group, Little Susan, Lucky Strike, Lucky Strike no. 2, Maybe, Temple Mountain mines.

Garfield County: Circle Cliffs: Acme, Lone B, Rocky Mountain; Stude Horse mines; Henry Mountains: Bromeide, Oreo mines.

Grand County: Hoosier mine; La Sal district: Bornite mine; Miner's Basin district: Dillon, M. I. F., Moab no. 1, Skylark; Tornado mines; Seven Mile Canyon: Shinarump nos. 1-3 claims.


Juab County: Deseret district: Detroit district: Charm, Copperhead, E. P. H., Ibex mines; Fish Springs district: Carnation, Emma, Galena, Utah mines; North Tintic district: Tintic Prince mine; Spot Mountain: Bell Hill mine: Tintic district: Black Dragon, Chief Consolidated, Iron Blossom, Lower Mammoth, Sunbeam, Swansea mines; West Tintic district: Iron King, Lockhead, 1903, Scotia, Tintic Western, War Eagle mines.


Piute County: Gold Mountain district: Annie Laurie, Sevier mines; Marysville district: La Vita prospect; Mt. Baldy district: Clyde, Deer Trail, Green Eyed Monster mines; Ohio district: Bully Boy and Webster, Cascade, Copper Belt, Dalton, Great Western, Iris, Shamrock mines.

Salt Lake County: Big Cottonwood district: American Metals, Big Cottonwood, Cardiff, Columbus-Redall, Howell-Baby McKee, Kentucky-Utah, Maxwell, Silver Mountain, Woodlawn mines; Bingham district: Bingham Copper Pat, Boston Consolidated, Burning, Howard, Grand, Hume, Iron King, Lockwood, Roe, Republic, Rock Hill, Star, Superior, Summer, Tonopah, U. S. and Lark, Winnamuck, Yampa, Yosemite mines; Little Cottonwood district: Albion, Alta-Galstone Vei no. 5, Alta Consolidated, Columbus Consolidated and Wasatch Drainage Tunnel, Columbus Rexal, Dwyer, Emma, Little Emma, Peruvian Consolidated, South Hecla, Superior mines; Little Cottonwood stock.

San Juan County: Big Indian district: Big Indian Copper mine: Elk Ridge, King Edward mine; La Sal Quadrangle: Black Hat, Firefly-Pigmy mines; Monteith district: Alam, Blue Bird, Copper Queen, Danish Girl, Dream, Ducket, Gold Queen mines; Paradox Valley district: Grey Dawn, Vanadium Queen mines; Red Canyon district: Markey no. 3 mine; White Canyon district: Blue Lizard, Fry No. 4, Happy Jack, Jomac, White Canyon No. 1, W. N. mines.

Sanpete County: Dry Canyon.

Sevier County: Rock Candy Mountain; Selina Creek district: Lead Hill mine.

Summit County: Marble district: Park City district: California, Comstock, Daly, Daly-Judge, Daly West, J. A. C. Tunnel, Kearns-Keith, Mayflower, New York, Ontario, Silver King, Wabash, Woodside mines.

Tooele County: Bingham district: Mayflower mine; Blue Bell district: Bennion Canyon, Little Valley, Morgan mines; Columbia district: Benmore, Sharp, Sultana mines; Deep Creek Mountains: Conner Hill, Mids, Silver Queen mines; Dugway district: Bertha, Bullion Canyon, Four Metals, Kelly's Hole, Metal States, Surplus mines; East Erickson district: Copper Jack, Dutch Peak, Flying Dutchman, Greens Ridge, Hard-to-Beat Canyon, Indianapolis, Sheprock, Silver King, Silver Shield, Tintic-Delaware mines; Erickson district: Black Jack, Black Rock, Blair, Deer Trail, Indian Boy, May Farmer, Silver Reef, Utokia mines; Free Coinage district: Gold Hill district: Alvarado, Cane Springs, Calaveras, Cash Boy, Climax, Copper Bloom, Copper Queen-Midland Mining Company, Cyclone, Doctor,

**Boulder County** Blue Mountains: Black Jack, Susie Q. Claims; Indian Peak district: Steelville. Spot properties; Newton district: Black Rock deposit; Pine Grove district; San Francisco district.

**Cache County** Hyrum area: Pig Hole Hollow.

**Daggett County** Daggett Chief property: Spring Creek deposit.

**Emery County** Cedar Mountains: Muddy River; Rochester: Saucer Basin.

**Garfield County** Boulder Mountain: Pleasant Creek; Hutch Pasture; Panguitch; Table Cliff Plateau; Tushar Range: Hawkins claims.


**Iron County** Antelope Range: Black Jack, Lucky Joe, Taylor claims; Cedar Mountains: Black Hawk, Joe Louis claims; Escalante district: Clove, Escalante mines: Stateline district: Creole, Gold Dome. Johnny, Ofer, Phelps, Utah Spur mines; Modena property.

**Juab County** Deep Creek Mountains: Gold Bond. Johnson Canyon, Singleton Canyon mines; Detroit district: Iron Blossom mine, Detroit district: Black Boy group, Charm, Copperhead, E. P. H., Ibx mines; Mt. Nebo district: Black Ledge claims; Thomas district: Fluorine Queen mine; Tintic district: Black Jack Empire, White Cloud; San Pitch Mountains: Black Jack, Orme properties.

**Kane County** Kitchen Corral Canyon.

**Millard County** Detroit district: Almond, Black Diamond, Blue Bell, Guy, Last Chance, Major Drum, Martha, Silica Plug mines.

**Pike County** Antelope Range: Dry Canyon; Marysville district: Blackbird, Blue Miami Moon no 1 mines; Mt. Baily district: Deer Trial mine; Mt. Belknap, Ohio district: Bully Boy and Webster mines. Gilbert claims.

**Rich County** Bear River Range: Lakeview claims.

**Salt Lake County** Big Cottonwood district: Carbonate, Cardiff, Woodlawn mines; Bingham district; Camp Williams: Evans Lime Quarry; Little Cottonwood district: Emma, Little Emma, Michigan - Utah mines.

**Sanpete County** Mt. Pleasant.

**Sevier County** Henry district: Iron Peaks, Georgia, Jumbo, Yellow Hornet, Krotke Iron, Noojay, Trinity mines; Sevier Plateau.

**Summit County** Beaver Canyon; Coalville; Park City district: Daly, Ontario, Silver King, Woodside mines.

**Tooele County** Deep Creek Mountains: Dewey, Fortuna mines; Bluebell district: Bogan, Morgan mines; Columbus district: Benmore, Sharp mines; East Erickson district: Copper Jack, Silver King, Silver Shield mines; Erickson district: Black Jack, Blackrock, Blain, Deer Trail, Indian Boy, May Farmer, Huber - Rydalch, Queen Mary mines; Ophir district: Lion Hill area; Ophir Hill area - Cliff, Ophir Hill Consolidated, Ophir Coalition mines.

PYROMORPHITE


Iron County: Escalante district: Escalante mine.
Juab County: Spring Creek district: Queen of Sheba mine; Tintic district: Eureka Hill, Mammoth mines. Summit County: Park City district: Scottish Chief mine.
Tooele County: Gold Hill district: Rube mine; Rush Valley district: Honerine mine; North Tintic district: Scranton mine.
Wasatch County: Blue Ledge district: Glencoe, McHenry, Valeo mines; Snake Creek district: Revelator mine.

PYROPE (See GARNET)

PYROPHYLITE


Tooele County: Oquirrh Mountains: Manning Canyon Shale; Stansbury Mountains: Manning Canyon Shale. Utah County: Beverly Hills: Manning Canyon Shale; Cedar Valley; Jordan Narrows: Orem, Saratoga, Soldiers Pass quadrangles; Lake Mountain: Manning Canyon Shale; Lehi district: Manning Canyon Shale; Thorpe Hills: Manning Canyon Shale; Wasatch Mountains: Manning Canyon Shale.

PYROXENE (See AUGITE, DIOPSIDE, HEDENBERGITE, HYPERSTHENE)

PYRRHOTITE


Juab County: Trout Creek.
Salt Lake County: Bingham district.
Tooele County: Gold Hill district: Gold Hill (U. S.), U. S. mines; Ophir district: Ophir Hill area - Ophir Hill Consolidated, Ophir Coalition mines; Rush Valley district: Settlement Canyon.

QUARTZ

Beaver County: Bradshaw district: Indian Peak district: Blue Bell, Cougar Spar, Dugout, JB, Nooday, Lost Sheep, Utah mines; Lincoln district: Creole mine; Newton district: Louise, Rob Roy, Sheep Rock mines; Pine Grove district: Monarch; Pruess district: Blackbird, Cactus mines, Cactus Gulch; Rock Corral; San Francisco district: Star district: Thrush, Cabin, Fluorine Ledge, Lucky Boy nos. 1-2, Manassa, Monte Cristo, Quartzite, North Virginia Extension, Virginia nos. 1-5 mines; Wah Wah mountains: Violet claims.
Box Elder County: Ashbrook district: Vipont mine; Rosebud district.
Davis County: Antelope Island.
Emery County: San Rafael district.
Grand County: Agate Switch; Miners Basin district: Dewey, High Ore mines.
Juab County: Deseret district: Miller mine; Goshute Indian Reservation: Thomas Range; Autunite no. 8, Bel Hill, Blowout, Dell no. 1, Dell no. 5, Evening Star, Hilltop, Lost Sheep, Nonella, Oversight mines; Topaz Mountain; Tintic district: Sioux mine; San Pitch mine; San Pitch Mountains: Black Jack claims; Spring Creek district: Trout Creek district: Apex mine: West Tintic district: 1903, Tintic Western mines.
Piute County: Gold Mountain district: Sevier mine; Marysvale district: Quicksilver mine; Mt. Baldy district: Deer Trail mine; Ohio district: Bully Boy and Webster mines.
Salt Lake County: Bingham district: Bingham Copper
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Pit, Galena. Old Jordan, U. S. and Lark mines; Little Cottonwood stock.

San Juan County La Sal Mountains; White Canyon district: Happy Jack mine.

Sevier County Henry district: Trinity prospect.

Summit County Park City district: Daly-Judge, Daly West, Jupiter, Kearns-Keith, Silver King, Silver King Consolidated, Woodsdale mines.

Tooele County Blue Bell district: Bennion Canyon mine; Columbia district: Benmore, Sharp, Iron Hope, Sultana mines; Dugway district: Rattler mine; East Erickson district: Ekker Canyon, Indianapolis, Silver King mines; Gold Hill district: Gold Bond, Rodenhouse Wash, star Dust, Success, U. S. mines; Granite district: Desert, El Dorado, Mountain Queen mines; Mercury district: Ophir district: Dry Canyon area; Ophir Hill area - Ophir Hill Consolidated, Ophir Coalition mines; North Tintic district: Scranton mine.

Utah County Alpine district: American Fork district: Bog mine; Little Cottonwood stock; East Tintic district: Burgin mine; Silver Lake district: Deer, Silver Creeks, Wells Canyon.

Washington County Silver Reef district.

Weber County Sierra Madre district.

QUENSELITE


Utah County East Tintic district: Burgin mine.

RABBITTITE


Emery County San Rafael district: Lucky Strike, Lucky Strike no. 2 mines.

RACEWINITE


Salt Lake County Bingham district: Highland Boy, Yampa mines.

RAUVITE

Hydrous calcium uranium vanadate, Ca(UO$_2$)$_2$V$_2$O$_8$·16H$_2$O. Occurs as dense botryoidal crusts, coatings. Metacolloid. Color purplish to bluish black. Luster adamantine to waxy. G. 2.9. Streak yellowish brown to olive. Not fluorescent.

Emery County San Rafael district: Flat Top Mesa, Migliaccio mine, Temple Mountain, South Temple Mountain, South Temple Wash.

Grand County Beaver Mesa: Corvusite nos. 1-3 mines; Thompsons district: Cactus Rat mines.

Piute County Marysville district: La Veta prospect.

Sevier County Henry district: La Veta prospect.

REALGAR


Box Elder County Ashbrook district: Vipont mine.

Emery County San Rafael district: Camp Bird No. 7, Fuemrol no. 2 mines.

Garfield County Coyote Creek district: Hampton mine.

Salt Lake County Bingham district: Butterfly Field.

Tooele County Mercur district: Brickyard, Golden Gate, Mercur, Sacramento mines.

Washington County Beaver Dam Mountains; Bull Valley district: Pilot claims.

RECTORITE

Interstratified pyrophyllite and vermiculite.

Tooele County Oquirrh Mountains: Manning Canyon Shale: Stansbury Mountains: Manning Canyon Shale.

Utah County Beverly Hills: Manning Canyon Shale; Lake Mountain: Manning Canyon Shale, Lehi district: Manning Canyon Shale; Thorpe Hills: Manning Canyon Shale; Wasatch Mountains: Manning Canyon Shale.

RED OCHER (See HEMATITE)

REEDMERGNERITE


Duchesne County Carter Oil Company wells: Green River Formation: Sinclair Mortenson well.

RHODOCHROSITE

**Beaver County** Blue Mountains: Black Jack, Susie Q claims; San Francisco district; Star district: Moscow mine.

**Box Elder County** Ashbrook district: Vipont mine.

**Grand County** Needles.

**Iron County** Modena property.

**Juab County** Detroit district: Black Boy group.

**Millard County** Detroit district: Almond, Blue Bell, Major Drum mines.

**Pitkin County** Ohio district: Dalton mine, Tushar Range: Dillon mine.

**Rich County** Bear River Range: Lakeview claims.

**Salt Lake County** Big Cottonwood district: Cardiff mine; Bingham district: Butterfield, Eagle Bird, Lucky Boy, Queen, Winnamuck and Dixon mines; Little Cottonwood district: Michigan-Utah mine.

**Summit County** Park City district: Daly, Ontario mines.

**Tooele County** Erickson district: Utonia claim.

**Utah County** East Tintic district: Burgin, Tintic Standard mines.

**Wasatch County** Blue Ledge district: Mayflower mine.

**RHODONITE**


**Summit County** Park City district: Daly, Ontario mines.

**Tooele County** Erickson district: Utonia claim.

**RHOMBOCLASE**

Hydrous iron sulfate, $\text{HFe(SO}_4\text{)}_2\cdot4\text{H}_2\text{O}$. Orthorhombic. Thin tabular plates. Also stalactites with radiating structure. Fracture conchoidal to fibrous. H. 2 G. 2.3. Luster submetallic to greasy. Colorless to white, gray, pale yellow, green or blue. 

**Utah County** East Tintic district.

**RIEBECKITE**


**Duchesne County** Green River Formation.

**RIPIDOLITE**

Hydrous magnesium iron aluminum silicate, $(\text{Mg,Fe-}\text{Al}_2\text{Si}_3\text{O}_10\text{O}_2\text{OH})_n$. Monoclinic. A chlorite variety. One perfect cleavage. Flexible. H. 2.25 G. 2.65-2.8. Color green.

**Utah County** East Tintic district.

**ROCKBRIDGEITE**

Basic iron manganese phosphate, $(\text{Fe,Mn})\text{Fe}_4\text{(PO}_4\text{)}_3\cdot14\text{H}_2\text{O}$. Orthorhombic. Botryoidal masses and crusts with radial fibrous or columnar structure. Cleavage excellent. Brittle. H. 4.5. Color dark green to olive-green, greenish black. Occurs in cavities in magnetite. 

**Iron County** Iron Springs district: Iron Mountain, Blowout Hill.

**ROEMERITE**

Hydrous ferrous and ferric sulfate, $\text{FeFe}_7\text{(SO}_4\text{)}_3\cdot14\text{H}_2\text{O}$. Triclinic. Occurs as crystalline masses and very crude, equant crystals. Cleavage perfect. H. 3 - 3.5 G. 2. Color dark brown. Luster oly to vitreous. Transparent. Taste saline, astringent.

**Emery County** San Rafael district: Calf Mesa, Dexter group.

**Utah County** East Tintic district.

**ROSASITE**


**Tooele County** Dugway district.

**Washington County** Tutsagubet district: Apex (Dixie) mine.

**ROSCOEITE**

Complex vanadium mineral, $\text{K(V,Al,Mg)}_2\text{(Al,Si}_3\text{O}_10\text{)(OH)}_2$. Monoclinic. Habit is massive. Color green, gray, tan brown. Luster pearly. H. soft. Cleavage good.

**Emery County** San Rafael district: Temple Mountain. 

ROSE QUARTZ (See QUARTZ)

ROSSITE


Grand County: Thompsons area; Thompsons district: Cactus Rat. Parco no. 23 mines.

RUBY SILVER

(See PROUSTITE and PYRARGYRITE)

RUTHERFORDINE


Emery County: San Rafael district: Delta mine.
San Juan County: "C" Group claims.

RUTILE


Bear County: Pruess district: Blackbird, Cactus mines.
Salt Lake County: Bingham district.
San Juan County: Moses Rock dike.
Sevier County: Henry district: Trinity prospect.
Tooele County: Gold Hill district: Mercur district.
Utah County: East Tintic district.
Wayne County: Caneville.

SABUGALITE

Hydrous acid phosphate of aluminum and hexavalent uranium, HA(UO$_2$)$_2$(PO$_4$)$_2$·8H$_2$O. Tetragonal. Occurs as thin plates, typically as densely aggregated crusts. Cleavage perfect. H. 2.5. G. 3.2. Color bright yellow to lemon yellow, closely resembling autunite. Luster weakly vitreous. Slightly flexible. Floresces bright lemon yellow.

Piute County: Marysville district: Freedom no. 2 mine.
San Juan County: White Canyon district: Happy Jack mine.

SAGENITE (See RUTILE)

SALEEITE

Magnesium uraninate phosphate, Mg(UO$_2$)$_2$(PO$_4$)$_2$·8-10H$_2$O. Tetragonal. Crystals rectangular plates. H. 2½. G. 3.27. Color pale yellow, yellowish green. Translucent to transparent. Floresces brilliant yellow green.

San Juan County: Paradox Valley district: Grey Dawn mine.

SAMARSKITE


Tooele County: East Erickson district: Hard-to-Beat, Sheeprock Canyons. Silver King mine: Granite Mountain district: Blue Bell mine.

SANIDINE (See ORTHOCLASE)

SAPONITE


Bear County: Star district.
San Juan County: Richardson district.
Utah County: East Tintic district.

SAPPHIRE (See CORUNDUM)

SATIN SPAR (See GYPSUM)

SCANDIUM

Rare metal. Sc. indefinite mineral association. Occurs in contact metamorphic deposits and in replacement veins.

Tooele County: Gold Hill district.
SCAPOLITE

Varied composition from (Na,Ca)\(_2\)Al\(_3\)(Al,Si)\(_2\)Si\(_6\)O\(_{24}\)(Cl,CO\(_3\),SO\(_4\)) to (Ca,Na)\(_4\)Al\(_3\)(Al,Si)\(_3\)Si\(_6\)O\(_{24}\)(Cl,CO\(_3\),SO\(_4\)). Tetragonal. Crystals usually prismatic. Usually coarse crystals, or with faint fibrous appearance. H. 5.5 - 6. G. 2.7. Luster vitreous. Color white, gray, pale green, bluish, reddish.
Sevier County Henry district: Trinity prospect.
Tooele County Gold Hill district: Doctor, Gold Bond, Rube mines.

SCEHELITE

Beaver County Bradshaw district: 2 R's group; Granite district: Big Pass, Bismuth, Burnt Hollow, Contact, Garnet, King-of-the-Hills. Major fault, Molly, Oak, Oak Basin, Rattler. Scheelite, Ward mines; Lincoln district: Creole mine; Rocky district: Copper Ranch, Old Hickory mines; San Francisco district: Cupric mine; Star district: Copper, King. Little May Lilly mines.
Box Elder County Ashbrook district: Bovine mine; Grouse Creek Range: Rocky Pass mine; Newfoundland district: Desert Peak, Park Rat Canyon; Rosebud district: A and W. Magnitude mines.
Davis County Lucky Boy and Pioche mines.
Grand County Ryan Creek Scheelite property.
Juab County Deep Creek Mountains: Apex, Eastern Trout Creek, Hornet, MacMillan, Mary mines; Trout Creek district: Apex, Bacon, Trout Creek mines; West Tintic district: Iron King. Tintic western mines.
Salt Lake County Big Cottonwood district: Mountain Lake. Tungsten Tunnel mines; Little Cottonwood district: South Hecla mine; Little Cottonwood stock.
Utah County Silver Lake district: Deer Creek, Mayday Extension, Milkmaid mines.
Washington County Beaver Dam Mountains.

SCHOEPITE

Emery County San Rafael district: Delta mine, Green Vein Mesa, Consolidated mine.
San Juan County Red Canyon district: Frey no. 4, Posey mines; White Canyon district: Happy Jack, Hideout mines.
Wayne County Fruita: Oyler mine.

SCHROECKINGERITE

Emery County San Rafael district: Delta mine; Bow Knot area; Green River district: Crabapple claim.
Grand County Cisco: Trader Smith's claims; Seven Mile Canyon; Thompsons district: McCoy, Parco no. 23 mines; Yellow Cat district: Yellow Cat group.
Juab County Thomas Range: Good Will. Yellow Chief groups; Topaz Mountain.
Piute County Marysvale district: Bullion Monarch, East Slope no. 2, Freedom nos. 1 - 2, Prospector nos. 1 and 3 mines.
San Juan County Elk Ridge: Notch Nos. 5 and 6 mines; La Sal Quadrangle: Brushy Basin No. 3. Hesperus mines; White Canyon district: Hideout mine.
Wayne County Coleman Canyon to Oak Creek.

SCORODITE

Beaver County San Francisco district: Horn Silver mine;
Star district.

Utah County: San Rafael district: Temple Mountain, Fuemrol no. 2 mine.

Juab County: Tintic district: Carissa mine; West Tintic district: Scotia mine.

Tooele County: Deep Creek Mountains: Bonanza mine. Gold Hill district: Bonanza, Boston, Gold Hill (U. S.), Gold Hill Standard, Mascot, Monte Del Rey, Ozark, Silver and Gold Mining Company, Unadine, U. S. mines; Mercur district.

Utah County: East Tintic district: Trixie mine.

SEARLESITE


Duchesne County: Carter Oil Company wells; Green River Formation; Sinclair Mortenson well.

Uintah County: Sun Oil Company South Ouray well.

SELENITE (See GYPSUM)

SELENIUM


Grand County: Thompsons district: Parco no. 23 mine.

San Juan County: Paradox Valley district: Vanadium Queen mine.

SELMANNITE


Salt Lake County: Bingham district.

SEPIOLITE

Hydrous magnesium silicate, Mg_5Si_2O_8·2H_2O. Orthorhombic. Compact, fine earthy texture, or clay-like. H. 2. Cleavage none. Floats on water in dry masses. Color grayish white, white, yellowish, bluish, reddish. Opaque.

Beaver County: Mineral Range.

Duchesne County: Indian Canyon.

Salt Lake County: Big Cottonwood district: Maxfield mine; Little Cottonwood district.

San Juan County: White Canyon district: Happy Jack mine.

Tooele County: Gold Hill district: Cane Spring mine. Rush Valley district: Homerine mine.

SERICITE (See MUSCOVITE)

SERPENTINE


Beaver County: Bradshaw district: 2 R's group; Pruess district: Blackbird, Cactus mines; Star district: Hub mine.

Salt Lake County: Big Cottonwood district.

Sevier County: Henry district: Trinity prospect.

Summit County: Park City district: Daly, Ontario mines.

Tooele County: Gold Hill district: Reaper mine; Rush Valley district: Homerine mine.

Washington County: Mineral Mountain: Gregerson mine.

SERPONITE

Hydrous magnesium silicate, H_4Mg_3Si_2O_7·2H_2O. Associated with minerals in contact metamorphic aureoles.

Utah County: East Tintic district.

SHERWOODITE

Hydrous calcium vanadate, Ca_3(VO)_4·V_2O_5·15H_2O. Tetragonal. Crystals equant or slightly flattened. Occurs singly or in aggregates. Color dark blue-black. Streak light blue. H. 2, G. 2, 8. Luster vitreous to earthy. Fracture subconchoidal to uneven.

Grand County: Wilson Mesa district.
SHORTITE


Duchesne County Carter Oil Company wells: Green River Formation; Sinclair Mortenson well.

Uintah County Sun Oil Company South Ouray well.

SICKLERITE


Juab County Tintic district.

SIDERITE


Beaver County Pruess district: Blackbird, Cactus mines.

Cache County Paradise district: Mineral Point.

Iron County Iron Springs district: Granite Mountain, Iron Mountain.

Salt Lake County Big Cottonwood district: Columbus—Rexall mine, Lulu mine; Bingham district: Highland Boy, Yampa mines; Little Cottonwood district: Columbus—Rexall, Emma mines.

San Juan County Elk Ridge: King Edward mine.

Tooele County Deep Creek Mountains: North Pass prospects; Dugway district: Boston, Bullion Canyon, Great Easter, Nautilus, Pride of the West mines; Gold Hill district: Alvarado, Copper Queen-Midland Mining Company, Gold Hill (U. S.); Midas, Midland mines;

Ophir district: Ophir Hill area - Ophir Hill Consolidated, Ophir Coalition mines.

Utah County East Tintic district: Burgin mine; Silver Lake district: Deer, Silver Creeks.

Wasatch County Blue Ledge district: Mayflower mine.

SIDERONATRITE


Wayne County Capital Reef Monument.

SIDEROTIL

Hydrous iron sulfate, FeSO_4·5H_2O. Triclinic. G. 2.1-2.2. Crystallographic and physical data are lacking. Occurs in fibrous crusts and divergent groups of needle-like crystals. Color white to yellowish, pale green.

Salt Lake County Bingham district.

San Juan County White Canyon district: Happy Jack mine.

Tooele County Gold Hill district: Alvarado mine.

Utah County East Tintic district: Tintic Standard mine.

SILICIFIED BONE and WOOD

(See CRYPTOCRYSTALLINE QUARTZ)

SILVER


Beaver County Star district: Harrington-Hickory, Rebel, White Rock mines.

Box Elder County Ashbrook district: Vipont mine; Lucin district: Tecoma Hill mine.

Cache County Hyrum area: Lucky Star, Tip Top claims; La Plata area: Yellow Jacket claim.

Emery County Emery district.

Juab County Deep Creek Mountains: Heavenly Hills prospect; Tintic district: Black Jack Empire, Bullion Beck, Centennial Eureka, Chief Consolidated, Gemini, Grand Central, Mammoth, Swansea mines.

Morgan County Strawberry mine.

Salt Lake County Bingham district: Dalton and Lark, Galena, Old Jordan. Neptune, Tiewaukee, U. S. and Lark mines.

Summit County Park City district: Scottish Chief mine.

Tooele County Blue Bell district: Black Hawk mine; Columbia district: Benmore, Sharp mines; Dugway district: Buckhorn, Four Metals mines; Ophir district: Dry Canyon area - Brooklyn, Mono mines; Ophir Hill area - Jim Fisk mine; Wild Cat Mountains: Silver Queen mine.

Utah County East Tintic district: Apex Standard, Burgin mines.

Wasatch County Blue Ledge district: Mayflower mine.

Washington County Silver Reef district: Barbee and
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Walker, Thompsons mines.

Weber County: Fremont Island district.

SIMPLOTITE


San Juan County: Paradox Valley district; Vanadium Queen mine.

SKLODOWSKITE


Juab County: Honeycomb Hills.

PLATITE County Marysvale district; Freedom no. 2 mine.

WAYNE County Fruita: Oyler mine.

SMALTITE


San Juan County: White Canyon district; Happy Jack mine.

SMECTITE

Group name for bentonite and fullers earth clay minerals, including beidellite, hectorite, montmorillonite, nontronite, and saponite.

Duchesne County: Green River Formation; South Fork Avintaquin Creek, Left Fork Indian Creek, Willow Creek.

Juab County: Thomas Range; Spor Mountain.

Uintah County: Green River Formation; South of Ouray.

SMITHSONITE


Beaver County: Granite district; Beaver View mine; Lincoln district; Lincoln mine; Star district; Cedar Talisman; Gold Crown; Hoosier Boy, Maud S., Moscow, Red Warrior, Vicksburg mines; San Francisco district: Horn Silver mine.

Box Elder County: Lucin district; Cunepah Tunnel, Tecoma Hill mine; Promontory district; Lakeview Mining properties; Saline Station.

Cache County: Hyrum area; Moon, Tip Top claims; Smithfield area.

Juab County: Mt. Nebo district; Eva, Freddie Lode mines; Tintic district; Bullion Beck, Chief Consolidated, Colorado, Eagle and Bell, Gemini, Godiva, Lower Mammoth, May Day, New Bullion, Yankee, Uncle Sam mines.

Morgan County: Argenta district; Carbonate Hill, Carbonate Gem mines.

Salt Lake County: Big Cottonwood district; Alta Tunnel and Transportation Company, Antelope, Carbonate, Cardiff, Prince of Wales, Silver Mountain mines; Little Cottonwood district; Dwyer, Emma, South Hecla mines.

Tooele County: Dugway district; Bertha, Bryan, Four Metals, Francis, Juno, Raymond-Bald Eagle mines; Gold Hill district; Garrison Monster mine; North Tintic district; New Bullion, Scranton mines; Ophir district; Dry Canyon area-Brooklyn, Kearsarge mines; Lion Hill area - Chloride Point; Ophir Hill area - Cliff, Hidden Treasure, Sacramento mines; Rush Valley district; Homestake mine.

Uintah County: Brush Creek district; Little Alta mine.

Utah County: American Fork district; East Tintic district: Burgin, Eureka Lily, North Lily, Trixie mines; Payson district; Syndicate mine; Wells Canyon.

Washington County: Tuttabughet district; Apex (Dixie) mine.

SMOKY QUARTZ (See QUARTZ)

SODALITE

Sodium aluminum silicate with chlorine, Na$_4$Al$_2$Si$_3$O$_{12}$Cl. Isometric. Crystals rare, commonly massive, in imbedded grains. Cleavage good. H. 5.5-6. G. 2.2. Luster vitreous. Color usually blue, also white, gray, green. Transparent to translucent.

San Juan County: La Sal Mountains; Middle Mountain, Brumley Ridge.

SODDYITE

Hydrous uranium silicate, (UO$_2$)$_3$·(SiO$_4$)$_2$·(OH)$_2$·5H$_2$O. Orthorhombic. Occurs as distinct crystals, also massive, earthy. Cleavage perfect. H. 3. G. 4.7. Color dull yellow to canary yellow, amber, greenish yellow, streak pale yellow. Luster vitreous.

Juab County: Honeycomb Hills.
SODIUM ANALOGUE OF HEWETTITE
(See BARNESITE)

SOUMANSITE (See WARDITE)

SPADAITE
Hydrous magnesium silicate, perhaps MgSiO$_3$•H$_2$O. Amorphous. Has a massive habit. H. 2.5. Color reddish.

Tooele County Deep Creek Mountains: Midas mine; Gold Hill district: Alvarado, Cane Springs, Rube mines.

SPANGOLITE

Juab County Tintic district.

SPECULARITE (See HEMATITE)

SPESSARITE (See GARNET)

SPAHEROCOBALTITE
(See COBALTOCALCITE)

SPHALERITE

Beaver County Bradshaw district: Cave mine; Granite district: Beaver View mine; Lincoln district: Lincoln mine; San Francisco district: Beaver Carbonate, Cupric, Peacock Copper, Washington mines; Star district: Harrington-Hickory, Hub, Moscow, Red Warrior, Vicksburg, White Rock, Wild Bill mines.

Box Elder County Ashbrook district: Vipont mine; Lucin district: Tecoma Hill mine; Park Valley district: Century, Susannah mines.

Emery County San Rafael district: Calyx, Dirty Devil, Fruenrol No. 2, Lucky Strike mines.

Grand County Ryan Creek Scheelite prospect.

Juab County Deep Creek Mountains. Trout Creek mine.

Fish Springs district: Carnation, Emma, Galena mines; Mt. Nebo district: Ajaxto no. 2, Eva, Freddie Lode, Highland, Santequin Chief mines; Tintic district: Bullion Beck, Chief Consolidated, Colorado, Eureka Hill, Iron Blossom, Lower Mammoth, Swansea mines; Trout Creek district; West Tintic district: Lockheed Iron, Scotia mines.

Millard County Leamington district: Wood Canyon.

Piute County Gold Mountain district: Annie Laurie mine; Mt. Baldy district: Clyde, Deer Trail mines; Ohio district: Bully Boy and Webster, Cascade, Great Western, Shamrock mines.

Salt Lake County Big Cottonwood district: American Metals, Antelope, Cardiff, Howell-Boy McKee, Maxwell, Prince of Wales, Reed and Benson, Silver Mountain, Woodlawn mines; Bingham district: Boston Consolidated, Brooklyn, Burning Mosquito, Butterfield, Carr Fork, Dalton and Lark, Dixon, Eagle Bird Lode, Frisco, Galena, Highland Boy, Last Chance, Nast, Neptune, Old Jordan, Queen, Tiewaukee, U. S. and Lark, Winnamuck, Yampa, Yosemite mines; Little Cottonwood district: Columbus Consolidated and Wasatch Drainage Tunnel, Swyer, Emma, Little Emma, South Hecla, Superior mines.

San Juan County Big Indian district: Mi Vida mine; Monticello district: Blue Bird, Danish Girl, Dream, Gold Queen mines; Paradox Valley district: Grey Dawn mine; White Canyon district: Happy Jack mine.

Sanpete County Dry Canyon.

Sevier County Salina Creek district: Ball, Lead Hill mines.

Summit County Park City district: California, Comstock, Daly, Daly Judge, Daly West, Kearns - Keith, Mayflower, Ontario, Silver King, Woodside mines.

Tooele County Bingham district: May Flower mine; Blue Bell district: Bennion Canyon mine; Columbia district: Sharp, Benmore mines; Deep Creek Mountains: Congar Hill, Cyclone, Devils Pit, Eagles Nest, Gold Star, Leap Year, Oro del Rey, Overland mines; Dugway district: Bertha, Bryan, Buckhorn, Eureka, Francis, Kellys Hole, Surplus mines; East Erickson district: Indianapolis, Tintic Delaware mines; Erickson district: Black Jack, Black Rock, Blain, Deer Trail, Indian Boy, May Farmer, Utonia mines; Gold Hill district: Bonanza, Cash Boy, Climax, Copper Queen-Midland Mining Company, Gold Bond, Gold Hill (U. S.), Rube, Silver and Gold Mining Company, Success, U. S. mines; North Tintic district: New Bullion, Scranston mines; Ophir district: Dry Canyon area - Mono mine; Ophir Hill area - Cliff, Hidden Treasure, Ophir Hill Consolidated, Ophir Coalition, Sacramento mines; Rush Valley district: Ben Harrison, Calumet, Galena King, Honerine, Mescatine, Muerbrook, Tip Top mines.

Utah County American Fork district: Bay State, Bog, Dutchman, Pacific, Silver Dipper, Water Fall, Yankee

Wasatch County: Blue Ledge district: Glencoe, Mayflower, McNulty, Valeo mines; Snake Creek district: Revelator, West Quincy mines.

SPHENE


Beaver County: Granite district: Garnet group.

Daggett County: Red Creek Complex.

San Juan County: Moses Rock dikes.

Tooele County: Deep Creek Mountains: Congar Hill mine. Ophir district: Lion Hill area.

SPINEL


Beaver County: Granite district: Garnet group.

Daggett County: Red Creek Complex.

STEELERITE

Hydrous aluminum vanadate, Al₂(VO₄)₂·6½H₂O. Cryptocrystalline. Occurs as powdery coatings, which resemble gum-like masses, chalcedony and flat plates. Luster waxy. Color canary yellow.

Grand County: Thompsons district: Cactus Rat mines.

STEINERITE


Piute County: Circleville Mountain.

STEPHANITE


Juab County: Tintic district: Humbug mine.

Salt Lake County: Little Cottonwood district: Emma, Little Emma mines.

Tooele County: Ophir district: Dry Canyon area - Mono mine.

STERRETTITE (see KOLBECKITE)

STIBICONITE


Daggett County: Red Creek Complex.

Wayne County: Caineville.

STEGERITE


Piute County: Circleville Mountain.

STEPHANITE


Juab County: Tintic district: Humbug mine.

Salt Lake County: Little Cottonwood district: Emma, Little Emma mines.

Tooele County: Ophir district: Dry Canyon area - Mono mine.

STERRETTITE (see KOLBECKITE)

STIBICONITE

Basic antimony oxide, probably Sb₂O₅(OH). Isometric. Habit massive, compact. Also as a powder, crust, or botryoidal. H. 4-5, G. 5.5, 6. Luster pearly to earthy. Color pale yellow, yellowish white, reddish white. Transparent.

Garfield County: Coyote Creek district: Hampton mine.

Tooele County: Deep Creek Mountains: Congar Hill mine. Ophir district: Lion Hill area.
STIBNITE


**Box Elder County** Willard district: Dry Lake mine.
**Garfield County** Coyote Creek district: Hampton mine.
**Juab County** West Tintic district: Tintic Western mine.
**Salt Lake County** Little Cottonwood district: Bay State mine.

**Summit County** Park City district: Silver King mine.
**Tooele County** Deep Creek Mountains: Congar Hill mines; Gold Hill district: Gold Hill (U. S.) mine; Mercur district: Golden Gate. Sparrowhawk mines; Ophir district: Chloride Point.

**Washington County** Bull Valley district: Pilot claims; Gunlock.

STILBITE


**Beaver County** Rocky district: Bawana mine.

STROMEYERITE


**Utah County** East Tintic district: Tintic Standard. Trixie mines.

STRONTIANITE


**Sanpete County** Dry Canyon.

SULFUR


**Beaver County** Bradshaw district: Cave mine; Gordon district: Sulphurdale; San Francisco district: Horn Silver mine; Southern San Francisco Mountains: Bismuth Mound; Sulphur district; Wah Wah Valley.

**Davis County** Antelope Island.

**Emery County** Black Dragon Canyon; Cedar Mountain district: Mexican Bend; San Rafael River; San Rafael district: Calf Mesa, Dexter group.

**Iron County** Cuma mine; Lund.

**Millard County** Gordon district: Cove Creek, Black, Excelsior, Mariposa. New York, Philadelphia, Prince Albert, Queen Victoria, Sulphur King. Victor Conqueror mines; South Pavant Range: Cove Fort.

**San Juan County** White Canyon: Happy Jack mine.

**Tooele County** Mount district: Brickyard, Hillside, Sacramento, Sunshine mines; Rush Valley district: Calumet mine.

**Utah County** Spanish Fork Canyon: Diamond Fork; Santequin district: Union Chief mine.

STOLZITE


**Box Elder County** Grouse Creek Range.

**Salt Lake County** Little Cottonwood district: Emma mine.

**Tooele County** Gold Hill district: Wilson Consolidated mine.

STRINGHAMITE

Hydrous copper calcium silicate, CuCaSiO₄·2H₂O. Monoclinic. Crystalline to botryoidal as a fracture filling. Transparent to translucent. Light to dark blue.

**Beaver County** Rocky district: Bawana mine.

STOLZITE

Copper vanadium sulfide, Cu₃VS₄. Isometric. Crystals cubic; usually massive. H. 3. 5. G. 4. Cleavage basal

Tooele County Mercur district.

Utah County Thorpe Hills: Cedar Fort member of Oquirrh Formation.

SUSSEXITE

Hydrous manganese magnesium borate, (Mn,Mg)(BO₂)₆·(OH)₂. Orthorhombic. Occurs as veinlets or masses with fibrous structure; embedded nodules, sometimes dense or chalky. H. 3-3½. G. 3.3. Color white, buff, straw yellow. Luster silky to earthy. Color white to buff or straw yellow.

SALT LAKE COUNTY Big Cottonwood district: Mountain Lake mine.

SZOMOLNOKITE


UTAH COUNTY East Tintic district: Burgin, Tintic Standard mines.

TABBYITE

An asphaltum. Occurs as minor veins and impregnations. Duchesne County Tabby Creek.

TALC


Juab County West Tintic district.

SALT LAKE COUNTY Bingham district: U. S. and Lark mines.

TOOELE COUNTY Gold Hill district: Rube mine; Mercur district; Ophir district: Ophir Hill area - Cliff mine.

TENNANTITE

Copper iron arsenic sulfide, (Cu,Fe)₁₂As₄S₁₃. Isometric. Crystals tetrahedral. Also massive, coarse or fine, granular to compact. H. 3-4.5. G. 4.6-5.1. Fracture subconchoidal to uneven. Rather brittle. Luster metallic. Streak black to brown to cherry-red. Opaque.

Bueno Eider County Ashbrook district: Vipont mine.

Emery County San Rafael district: Dexter Group, Temple Mountain mines.

Juab County Tintic district.

RICH COUNTY Swan Creek district: Victoria prospect.

SALT LAKE COUNTY Bingham district: Tiewaukee mine.

SAN JUAN COUNTY Elk Ridge: King James-Virgene mine; La Sal Quadrangle: Firefly-Pigmay mine.

Tooele County Dugway district: Bertha claim; Gold Hill district: Gold Hill (U. S.), Success mines; Ophir district: Ophir Hill area - Ophir Hill Consolidated, Ophir Hill area - Ophir Hill Consolidated.
TENORITE


TETRADYMITE


THAUMASITE


THENARDITE

Minerals and Mineral Localities of Utah. Kenneth C. Bullock

grayish, yellowish, reddish. Transparent to translucent.

*Box Elder County* Shores of Great Salt Lake.

*Davis County* Shores of Great Salt Lake.

*Tooele County* Shores of Great Salt Lake.

**THERMONATRITE**


*Duchesne County* Green River Formation.

**THINOLITE**

A calcite pseudomorph. Found as tufa along shores of ancient Lake Bonneville, especially the Provo shoreline, forms cement to gravels.

*Salt Lake County* Lake Bonneville shorelines.

*Utah County* Lake Bonneville shorelines.

**THOMPSONITE**


*Piute County* Marysvale district: Silica Hills.

*Salt Lake County* Bingham district: Bingham Copper Pit.

*Tooele County* Rush Valley district: Settlement Canyon.

*Utah County* East Tintic district.

**THORITE**


*Sevier County* Monroe Canyon.

**THUCHOLITE**


*Emery County* San Rafael district: Calyx mine, Temple Mountain.

*THULITE* (See ZOISITE)

**TIEMANNITE**


*Piute County* Marysvale district: Quicksilver mine; Mt. Baldy district: Lucky Boy mine.

**TINTICITE**

Hydrous basic iron phosphate, Fe\(_6\)(PO\(_4\))\(_4\)(OH)\(_6\)-7H\(_2\)O. Probably orthorhombic. Occurs as dense and earthy to porcelaneous masses, composed of submicroscopic crystals. H. 2.5. G. 2-8. Color creamy white.

*Utah County* East Tintic district: Tintic Standard mine.

**TITANITE* (See SPHENE)

**TITANOCLINOHUMITE**

Magnesium silicate titanium oxide, (Mg\(_2\)Si\(_4\))O\(_4\)-Ti-(OH,F)\(_2\)-O\(_2\). G. 3.27. Occurs with kimberlite. Bright yellow color.

*San Juan County* Moses Rock dike.

**TOBERMORITE**


*Emery County* San Rafael district: Delta, Dirty Devil mines.

*Salt Lake County* Bingham district: Bingham Copper Pit.

**TOPAZ**


*Beaver County* Granite district: Miller mine; Mooney Springs; Pine Grove district: Pine Grove Associates mine; Wah Wah Mountains: Violet claims.

*Juab County* Dugway Range; Thomas Range; Topaz Mountain.

*Tooele County* Dugway district; Ophir district: Ophir
Hill area - Hidden Treasure mine.

TORBERNITE

Hydrous copper uranium phosphate, Cu(UO₂)₃(PO₄)₂·8-12H₂O. Tetragonal. Crystals thin to thick tabular, usually square in outline. Also foliated, micaceous, and scaly aggregates. H. 2-2.5. G. 3.2. Cleavage perfect basal. Laminae rather brittle. Luster vitreous, pearly. Color emerald green. Streak paler than the color. Beaver County Newton district: Indian Creek, Sniffer and Mystery claims. Emery County Green River district: Venura, Yellow Queen claims: San Rafael district: Copper Globe district. Flat Top Mesa, Temple Mountain. Garfield County Circle Cliffs: Acme, Black Widow, Blue Goose, Horse Head, Rocky Mountain, Steam Boat mines; Oak Creek prospect; Spotted Dog claim. Kane County Bullion Claims; Virgin River. Piute County Antelope Range; Marysville district: Bullion Monarch, Copper Butte, Freedom Nos. 1-2, Prospector Nos. 1 and 3 mines. San Juan County La Sal Mountains; Monument Valley district: Skyline mine; Paradox Valley district: Grey Dawn mine; Red Canyon district: Markey no. 3, Posey mines; White Canyon district: Happy Jack, Hideout, W. N. mines. Sanpete County R. A. J. prospect. Uintah County Snow claims. Wayne County Capitol Reef Monument; Fruita: Oyler mine.

TOURMALINE

Complex silicate of boron and aluminum, XY₂Al₆(BO₃)₂(Si₆O₁₈)(OH)₄. X = Na, Ca and Y - Al, Fe, Li, Mg. Hexagonal. Usually in crystals which are prismatic, vertically striated. Also massive compact, coarse to fine columnar, either radiating or parallel. H. 7-7.5. G. 3-3.2. Cleavage perfect. Fracture conchoidal. Luster vitreous. Colorless to white. Occurs in acidic volcanic rocks. Tooele County Fairfield quadrangle.

TRAVERTINE (See CALCITE)

TREMOLITE


TRIDYMITE


TROILITE (See PYRRHOTITE)

TRONA


TROOSTITE (See WILLEMITE)

TSCHERMIGIT (See AMMONIA ALUM)
TUNGSTENITE


Salt Lake County: Little Cottonwood district: Emma, Little Emma mines.

TURQUOIS


Salt Lake County: Bingham district: Bingham Copper Pit.
Tooele County: East Erickson district: Copper Jack, Jesse! Bezzel, Silver Shield mines.

TYROLITE


Juab County: Tintic district: Ajax, Gold Chain, Mammoth mines.
Salt Lake County: Little Cottonwood district: Centennial Alta mine.
Tooele County: Gold Hill district: Gold Hill (U.S.) mine.

TYUYAMUNITE


Piute County: Marysvale district: Freedom nos. 1-2 mines.

URANITE


Beaver County: Pine Grove district: Daisy, Producer, Staats (Monarch) mines.
Emery County: Cedar Mountain district: Green River district: Crabapple, Venura, Yellow Queen claims; San Rafael district: Cali, Delta, Little Susan, Lucky Strike, Lucky Strike no. 2, Majors, Marysvale Canyon, Maybe, Pay Day, Temple Mountain, Rex no.2 mines.
Garfield County: Circle Cliffs: Black Widow, Horse Head Stud Horse mines; Oak Creek prospect.
Grand County: Seven Mile Canyon: Thompsons district: Juniper mine: Yellow Cat district: Eli Malich's Lucky Day, L.A. Sutherland Sock claims.
Juab County: Honeycomb Hills.
Morgan County: Arthur Fork.

Piute County: Marysvale district: Buddy, Bullion Monarch, Freedom Lease, Freedom nos. 1-2, Prospector nos. 1 and 3 mines; Mt. Baldy district: Deer Trail mine.
San Juan County: Big Indian district: Big Buck, Cal Uranium, Homestake, La Sal, Mi Vida, Radon, Rattlesnake mines; Elk Ridge: Avalanche No. 13, Horsehoe No. 1, King Edward, King James-Virgene, Oakie, Payday, Sandy Nos. 2 and 3, Western Payday, Woodenshoe No. 3 mines; La Sal Quadrangle: Black Hat, Firefly-Pigmay, Little Peter. Yellow Bird mines; Monument Valley: Holiday Mesa, Mitten no. 1, Skyline mines; Paradox Valley district: Grey Dawn, Vanadium Queen mines; Red Canyon district: Frey no. 4, Markey no. 3, Posey mines; White Canyon district: Black Lizard, Fry no. 4, Happy Jack, Hideout, Notch, White Canyon no. 1 W. N. mines.

Tooele County: East Erickson district: Flying Dutchman, Hard-to-Beat, Sheeprock Canyons, Silver King mines.

Wayne County: Fruita: Oyler mine.

Weber County: Ogden Canyon.

URANITE (See AUTUNITE and TORBERNITE)
Emery County: San Rafael district.

URANOCHER (See URANOPILITE)

URANOCIRCITE (See META-URANOCIRCITE)

URANOPHANE

Hydrous basic calcium uranium silicate, Ca(UO$_2$)$_2$-Si$_2$O$_7$-6H$_2$O. Monoclinic. Crystals are minute needles, with poorly developed faces. Occurs in radiating aggregates, massive, fibrous. Cleavage perfect. H. 2. 5. G. 3. 8. Brittle. Luster vitreous to pearly, dull to waxy. Color lemon yellow, pale straw yellow, honey brown, greenish yellow, orange yellow. Weakly fluorescent.

Beaver County: Newton district: Sniffer and Mystery claims; Pine Grove district: Staats (Monarch) mine.


URANOSTHALLITE (See LIEBIGITE)

UTAHITE (See CARPHOSIDERITE)

UTAHILITE (See VARISCITE)

UTAH ONYX (See CALCITE)

UVANITE

Hydrous uranium vanadate, U$_3$V$_2$O$_{21}$·15H$_2$O. Orthorhombic. Occurs as minute crystalline masses and coatings. Cleavage good. Color brownish yellow.

Emery County: San Rafael district: Flat Top Mesa, Temple Mountain, Wild Mountain mine, Temple Rock, South Temple Wash.

UVAROVITE (See GARNET)
VALENTINITE

Antimony trioxide, Sb$_2$O$_3$. Orthorhombic. Crystals commonly prismatic or tabular. Occurs as fan-shaped or stellate groups. Also massive, lamellar, columnar, or granular. H. 2.5-3. G. 5.7. Cleavage perfect. Brittle. Luster adamantine to pearly. Colorless, white, yellowish, reddish, gray, brownish.

Garfield County Coyote Creek district: Hampton mine.

Tooele County Deep Creek Mountains: Conger mine.

VANADINITE


Beaver County Star district: Harrington-Hickory, Rebel, White Rock mines.

Box Elder County Rosebud district: A & W, Magnitude mines.

Utah County Santaquin district: Blue Eagle prospect.

VANADIUM HYDROMICA (See ROSCOELITE)

VANDENDREISSCHEITE

Hydrous lead uranium oxide, PbU$_7$O$_{17}$·12H$_2$O. Orthorhombic. Occurs as dense microcrystalline aggregates. Color yellow-orange, brownish orange, orange-red. Cleavage good.

Emery County San Rafael district: Delta mine.

VANOXITE

Hydrous vanadium oxide, V$_4$V$_2$O$_{13}$·8H$_2$O (?). Occurs in microscopic crystals, bladed. Massive, occurs as a cement in sandstone. Color black, opaque.

Garfield County Henry Mountains: Little Rockies district: Del Monte group: Ekker mine; North Wash district: S. Y. Guthrie group; Trachyte district: Blitz nos. 1-2, June Bell nos. 1-4, Minnie Pearl nos. 1-2, Straight Creek, Trachyte nos. 1-2, V. C. A. claims.

Grand County Thompsons area: Thompsons district: Cactus Rat, Parco no. 23 mines.

San Juan County Big Indian district: Mi Vida mine.

VARISCITE


Box Elder County Lucin district: Empire mine; Promontory district: Promontory Point; Snowville; Utah Hill.

Tooele County Mercur district: Golden Gate, Mercur, Sparrowhawk mines; Stansbury Mountains: Amatrice Hill.

Utah County Clay Canyon.

VERMICULITE

This term includes a number of micaceous minerals, all hydrated silicates, in part related to chlorites. Alteration products chiefly of micas. Laminae are soft, pliable. Luster pearly, bronze-like. Color white, yellow, brown.

Davis County Antelope Island.

Tooele County Ogden Mountains: Manning Canyon Shale; Stansbury Mountains: Manning Canyon Shale.

Utah County Beverly Hills: Manning Canyon Shale; Lake Mountain: Manning Canyon Shale; Lehi district: Manning Canyon Shale; Thorpe Hills: Manning Canyon Shale; Wasatch Mountains: Manning Canyon Shale.

VESUVIANITE (See IDOCRAZE)

VITROITE (See BERTRANDITE)

VIVIANITE


Salt Lake County Bingham district: Bingham Copper Pit.

VOGLITE

Hydrous calcium copper uranium carbonate, probably Ca$_2$Cu(UO$_2$)(CO$_3$)$_4$·6H$_2$O. Triclinic or monoclinic. Occurs as coatings and aggregates of tiny scales. Cleavage perfect. Luster pearly. Color emerald green, bright grass green.

San Juan County White Canyon district: White Canyon no. 1 mine.

VOLBROTHITE
Hydrous copper vanadate, Cu$_3$(VO$_4$)$_2$·3H$_2$O. Monoclinic. Occurs as scaly, spongy, or fibrous crusts; also as rosette-like aggregates. H. 3.5. G. 3.5. Cleavage perfect. Luster vitreous to pearly. Color dark olive-green, yellowish green.

Daggett County: Red Creek, Yellow Canary Uranium deposit.

Grand County: Richardson district.
San Juan County: Elk Ridge: Notch No. 5 and 6 mines. Utah County: Thorpe Hills.
Washington County: Silver Reef district: B Reef, Tecumseh Hill, Wells mines.

VOLCHONSKOITE


Grand County: Morrison Formation.
San Juan County: Morrison Formation.

VOLTAITE


Emery County: San Rafael district: Calf Mesa, Dexter group.
Utah County: East Tintic district.

WAD

Manganese ore composed of a mixture of hydrous manganese oxides. Occurs in earthy or compact masses; also reniform, concretionary, or incrusting. H. 1-6. G. 2-4.4. Luster dull. Color black, bluish, brownish black. Streak black, bluish black, reddish brown.

Emery County: Cedar Mountain district.
Garfield County: Hutch Pasture.
Juab County: Detroit district: Iron Blossom mine; East Tintic district: Black Jack Empire, White Cloud mines; West Tintic district: War Eagle claim.
Millard County: Detroit district: Almond, Black Diamond, Blue Bell, Guy, Last Chance, Martha, Major Drum, Silica Plug mines.
Salt Lake County: Big Cottonwood district: Antelope, Prince of Wales mines.
Sevier County: Sevier Plateau: Black Beauty, Beauty claims.
Tooele County: Columbia district: Benmore, Sharp mines; Erickson district: Hyber, Rydalch, Queen Mary mines: Ophir district: Lion Hill area - Buffalo, East Side, Empire, Iron, Monarch, Northern Light, Woodruff mines: Ophir Hill area - Hidden Treasure, Ophir Hill Consolidated, Ophir Coalition, Sacramento mines; Rush Valley district: Honerine mines.
Utah County: American Fork district: Miller mine; East Tintic district: Tintic Standard mine; Lehi district: Wildcat mine; North Tintic district: Oxen mine, Tip Top Tunnel; Utah district: Alpha, Emerald, Lucky Boy, Queen of the West, Spalding, Trotter mines.

WARDITE

Hydrous sodium aluminum phosphate, NaAl$_2$(PO$_4$)$_2$·2H$_2$O. Tetragonal. Crystals are pyramidal. Also granular aggregates and crusts, radially fibrous, concentrically banded spherulites. H. 5. G. 2.8. Cleavage perfect. Luster vitreous. Color blue-green to pale green, colorless.

Box Elder County: Utahlite Hill.
Tooele County: Amatricite Hill.
Utah County: Clay Canyon.

WAVELLITE

Hydrous basic aluminum phosphate, Al$_3$(OH)$_2$(PO$_4$)$_2$·5H$_2$O. Orthorhombic. Crystals rare. Usually occurs as hemispherical or globular aggregates with radial structure. Also as crusts or stalactitic. H. 3.5-4. G. 2.3. Cleavage perfect. Fracture uneven. Brittle. Luster vitreous. Color greenish white, green, yellow, brownish blue, white, colorless.

Salt Lake County: Bingham district: Bingham Copper Pit.

WEEKSITE

Hydrous potassium uranium silicate, K$_2$(UO$_2$)$_3$(Si$_2$O$_7$)·4H$_2$O. Orthorhombic. Occurs chiefly as radiating fibrous clusters. H. 1-2. G. 4.1. Luster waxy. Color yellow.

Juab County: Thomas Range: Autunite no. 8, Good Will, Yellow Chief mines. Topaz Mountain.

WERNERITE (See SCAPOLITE)

WHEELERITE

A yellowish resin, resembling amber.

Garfield County: Cannonville.

WHEWELLITE

Hydrous calcium oxalate, CaC$_2$O$_4$·H$_2$O. Monoclinic. Occurs only as crystals, equant, or prismatic. Cleavage good. H. 2.5, G. 2.2. Fracture conchoidal. Brittle.
*San Juan County* Big Indian district: Radon mine.

**WILLEMITE**


*Beaver County* Star district: Cedar-Talisman, Hoosier Boy mines.
*Iron County* Escalante district: Escalante mine.

**WIRE SILVER** (See SILVER)

**WOLFRAMITE** (See also FERBERITE and HUEBERNITE)

Manganese iron tungstate, \( (\text{Mn,Fe})\text{WO}_4 \). Monoclinic. Habit commonly short prismatic crystals, less frequently long prismatic, or tabular. Also lamellar or massive granular. H. 4-4.5. G. 7.3. Cleavage uneven. Brittle. Luster submetallic. Color dark gray, brownish black, iron black.

*Beaver County* Newton district: North Creek.
*Tooele County* East Erickson district: Eckker Canyon prospect; Gold Hill district: Kena, Pole Star Copper Company mines; Ophir district: Ophir Hill area - Ophir Hill Consolidated, Ophir Coalition mines.

**WOLLASTONITE**

Calcium silicate, \( \text{CaSiO}_3 \). Triclinic. Usually occurs in tabular crystals. Commonly massive, cleavable to fibrous, also compact. H. 5-5.5. G. 2.8. Cleavage perfect. Luster vitreous to pearly. Colorless, white, gray. Translucent.

*Beaver County* Bradshaw district: Granite district; Big Pass group: Lincoln district; Pruess district: Blackbird, Cactus mines; San Francisco district: Cupric, Imperial mines.
*Juab County* West Tintic district.
*Millard County* House Range: Amasa Valley, Notch Peak intrusive.

*Salt Lake County* Big Cottonwood district: Maxfield mine; Little Cottonwood district; South Hecla mine.
*Tooele County* Gold Hill district: Alvarado, Bonnemort, Cane Springs, Frankie, Gold Hill (U. S.), Silver King mines; Ophir district: Ophir Hill area - Hidden Treasure, Sacramento mines; Rush Valley district: Honerine mine, Soldier Creek.
*Utah County* Silver Lake district: Deer Creek.

**WULFENITE**


*Beaver County* Rocky district: Adelia mine; San Francisco district: Horn Silver mine; Star district: Harrington Hickory, Rebel, White Rock mines.
*Box Elder County* Lucin district: Empire, Tecoma Hill mines; Rosebud district: A and W Magnitude mines.
*Iron County* Escalante district: Escalante mine.
*Piute County* Mt. Baldy district: Pluto mine; Ohio district: Bully Boy and Webster mines.
*Rich County* Swan Creek district: Victoria prospect.
*Salt Lake County* Big Cottonwood district: Woodlawn mine, Little Cottonwood district: Alta Consolidated, Centennial Alta, City Rocks, Emma, Flagstaff, Little Emma, Michigan - Utah mines.
*Tooele County* Dugway district: Boston, Buckhorn, Four Metals mines; Gold Hill district: Cash Boy, Cyclone, Gold Hill (U. S.), Red Jacket, Standard, Shay mines.
*Utah County* American Fork district: Miller mine.

**WURTZILITE**


*Duchesne County* Antelope Canyon; Avintaquin Canyon; Indian Canyon; Rat Hole Canyon: Red Creek.

**WURTZITE**


*Beaver County* San Francisco district: Horn Silver mine.
*Piute County* Mt. Baldy district: Clyde mine.
*Tooele County* Ophir district: Ophir Hill area - Ophir Hill Consolidated, Ophir Coalition mines.
*Uintah County* Sun Oil Company South Ouray well.
*Utah County* East Tintic district: North Lily mine.

**XANTOPHYLLITE**

Brittle, mica, perhaps. \( \text{Hg(Mg,Ca)}_{14}\text{Al}_{16}\text{Si}_{2}\text{O}_{52} \). Mono-

Salt Lake County: Big Cottonwood district: Big Cottonwood, Mountain Lake mines.

XENOTIME


Morgan County: Arthur Fork.

ZEUNERITE

Hydrous copper uranium arsenate, $\text{Cu}(\text{UO}_2)_2(\text{AsO}_4)_2 \cdot 12\text{H}_2\text{O}$. Tetragonal. Crystals are usually rectangular tablets. Color pale-green to emerald green. G. 3.7.

Emery County: San Rafael district: Calf Mesa, Delta mine, Dexter group.

Garfield County: Circle Cliffs: Horse Canyon, Stud Horse mine.

Juab County: Tintic district: Centennial Eureka mine.

Piute County: Marysville district: Freedom no. 2 mine.

ZINKENITE


Summit County: Park City district: Daly West mine.

ZIPPEITE

Hydrous basic uranium sulfate, (UO$_2$)$_2$$(\text{SO}_4)(\text{OH})_2 \cdot 4\text{H}_2\text{O}$. Orthorhombic. Occurs as fragile crusts and reniform spheroidal aggregates. Also pelvulente to earthy. H. 2. G. 3. 2. Cleavage perfect. Luster dull to earthy. Color orange yellow, orange red, reddish brown. Fluoresces lemon yellow to green.

Emery County: Green River district: Sodaroll claim; San Rafael district: Calf Mesa, Consolidated, Delta, Dexter group, Green Vein Mesa, Lone Tree, Lucky Strike, Lucky Strike no. 2 mines, Temple Mountain.

Garfield County: Henry Mountains.

Grand County: Seven Mile Canyon; Thompsons district: Parco no. 23 mine.

Piute County: Marysville district: Bullion Monarch, Freedom no. 2, Prospector no. 1 mines.

San Juan County: Elk Ridge: King James-Virgene mine; Red Canyon district: Posey mine; White Canyon district: Happy Jack, Hideout, W. N. mines.

Wayne County: Fruit: Oyler mine, Grand Wash to Capitol Wash.

ZIRCON


Beaver County: San Francisco district: Horn Silver mine.

Box Elder County: Willard.

Emery County: Emery.

Garfield County: Henry Mountains.

Kane County: Kaiparowits Plateau.

Piute County: Mt. Baldy district: Deer Trail mine.

Salt Lake County: Little Cottonwood stock.

Tooele County: Gold Hill district: Reaper mine; Granite Mountain district: Mercur district: Mercur mine; Ophir district: Ophir Hill area - Ophir Hill Consolidated, Ophir Coalition mines.

Utah County: Little Cottonwood stock; Silver Lake district: Milmamid mine, Silver Creek.

Wayne County: Caineville.

ZOISITE

Hydrous calcium aluminum silicate, $\text{Ca}_2\text{Al}_3(\text{SiO}_4)_3$$(\text{OH})$. Orthorhombic. Crystals prismatic, vertically striated. Also massive, columnar to compact. H. 6-6. G. 3. 3. Cleavage good. Fracture uneven to subconchoidal. Brittle. Luster vitreous to pearly. Color grayish white, gray apple-green, rose red. Thulite, a rose-red variety, is found in the Granite district.

Beaver County: Granite district: Miller mine.

Davis County: Antelope Island.

Juab County: Tintic district.

Salt Lake County: Little Cottonwood district.

Tooele County: Gold Hill district: Alvarado, Bonnemort, Cane Springs. Rube mines; Rush Valley district: Calumet mine.

Utah County: East Tintic district.

ZUNYITE

Hydrous aluminum silicate, $\text{Al}_{13}\text{Si}_5\text{O}_{20}$(OH,F)$_{18}$Cl.

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APPENDIX
Minerals of Utah

The list below contains 706 names which appeared in Chapter III. Of these, 134 are duplicate mineral names, rock terms, or hydrocarbon names, and were not programmed in the computer analyses reported in the remaining five lists. If a mineral has two names, the one that has priority or more common usage was used in the computer analysis, and the second rank name is indicated as follows: Adularia (See Orthoclase).

Abelsonite
Abernathyite
Acanthite
Acmite
Actinolite
Adamite
Adularia (See Orthoclase)
Aegerite (See Wurtzilite)
Aegirine (See Aegirite)
Aegrite
Aeonite (See Wurtzilite)
Agate (See Cryp. Quartz)
Aguilante
Aikinite
Alabaster (See Gypsum)
Alaskaite
Albertite (hydrocarbon)
Albite
Alisonite (See Galena)
Alunante
Allevardite (See Rectorite)
Allophane
Almandine (See Spinel)
Almandite (See Garnet)
Altaite
Alumian
Aluminate
Alunite
Alunogen
Amatrice (See Variscite)
Anhydrite (See Quartz)
Ammonia Alum
Ammoniojarosite
Amphibole
Analbite (See Alcalcine)
Analcite
Anatase
Andalusite
Andesine
Andradite (See Garnet)
Anglesite
Anhydrite
Ankerite
Annabergite
Anorthite
Anorthoclase
Anthophyllite
Antigorite
Antlerite
Apatite
Apjohnite
Apophyllite
Aquatamarine (See Beryl)
Aragonite
Ardunate
Aegrite
Argentine
Argentojarosite
Argulite (hydrocarbon)
Argyrodite
Arsenic
Arseniosiderite
Arsenobismite
Arsenopyrite
Asbestos (See Serpentine)
Asphalt (See Asphaltum)
Asphaltum (hydrocarbon)
Atacamite
Augite
Aurichalcite
Autunite
Austinite
Axinite
Azurite
Balydonite
Barite
Barnesite
Barytocalcite
Basaluminite
Bassanite
Bassetite
Bayleyite
Beavertite
Bequerelite
Biedellite
Bentonite (See Montmorillonite)
Bertrandite
Beryl
Beta-uranophane (See Beta-uranotile)
Beta-uranotile
Beudanite
Bickerite (See Austinite)
Bieberite
Bullinite
Billingsleyite
Bindheimite
Bunite (See Tennantite)
Biotite
Berinesite
Bischofite
Bismite
Bismoclite
Bismuth
Bismuthian bindheimite
Bismuthinite
Bismutite
Bixbite (See Beryl)
Bixbyite
Bloedite
Boehmite
Bog Ore (See Goethite)
Bolwoodite
Boothite
Borickite
Bonnaite
Boulangerite
Bournonite
Brachinite
Brannite
Bravoite
Brickerite (See Austinite)
Brochantite
Brockite
Bronzite (See Enstatite)
Brookite
Brucite
Burbankite
Bushmanite (See Pickeringite)
Butlerite
Calamine (See Hemimorphite)
Calaverite
Calciovolborthite
Calcite
Calciodonite
Carbonate Apatite
Carbon Dioxide (gas)
Carminite
Carnallite
Carnelian (See Cryp. Quartz)
Carnotite
Carphosiderite
Cassiterite
Celadonite
Celestite
Cerargyrite
Cerussite
Cervantite
Chabazite
Chalcanthite
Chalcedony (See Cryp. Quartz)
Chalcocite
Chalcocophanite
Chalcophyllite
Chalcopyrite
Chalcotrichite (See Cuprite)
Chenevièze
Chert (See Cryp. Quartz)
Chevkinite
Chlorite
Chloroperal (See Nontronite)
Chlor-Utalite (See Variscite)
Chrome mica-clay
Chromite
Chrysocolla
Chrysotile (See Olivine)
Cinolite
Cinnabar
Clauselite
Clausdalite
Clinohlore
Clinoclase
Clinoclasite (See Clinoclase)
Clinohumite
Clinoptilolite
Clinozoisite
Cobalt Bloom (See Erythrite)
Cobaltite
Cobaltocalcite
Cobaltomenite
Coconinoite
Coffinite
Collophane
Conichalcite
Connellite
Copaite (hydrocarbon)
Copiapite
Copper
Copper Pitch (See Tenorite)
Coquimbite
Cordierite
Corkite
Coronadite
Cornwallite
Corundum
Corvusite
Cosalite
Cotunnite
Covellite
Crandalite
Crednerite
Cristobalite
Crocidolite (See Riebeckite)
Cryolite
Cryptocrystalline Quartz
Cryptomelane
Cubanite
Cuprite
Cuproadanite (See Adamite)
Cuprobiusinite
Cuprodescloizite (See Desclouzite)
Cuprogoslarite
Cuproplumbite (See Balydonite)
Cuproscheelite (See Cuprotungstite)
Cuproplumbite (See Balydonite)
Currosklodowskite
Cuprotungstite
Cyanotrichite
Cyrvtolite (See Zircon)
Dahlite (See Carbonate apatite)
Damourite
Danburite
Daubreeite
Davisonite
Dawsonite
Dehrmite
Delessite
Deurite
Dennisonite (See Davisonite)
Desclouzite
Diadochite
Diaspore
Dickroite (See Cordierite)
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Magnetite
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Manganodolomite (See Dolomite)
Marcasite
Martite (See Hematite)
Massicot
Matildite
Meerschaum (See Sepiolite)
Melanomite (See Tenorite)
Melanovanadite
Melanterite
Mercury
Mesolite
Meta-aluminate
Meta-autunite
Metacinnabar
Metahewettite
Metarosite
Metastibnite
Metastrengite
Metatorbernite
Metatyuyamunite
Meta-uranocircite
Metavariscite
Metazeunerite
Miargyrite
Microcline
Millhite
Mimetite
Minium
Mirabilite
Mixite
Molybdenite
Molybdate (See Ferrimolybdate)
Monazite
Monheimite (See Smithsonite)
Monimolite
Montgomeryite
Monticellite
Montmorillonite
Montroseite
Mordenite
Morganite (See Beryl)
Mottramite
Muscovite
Nahcolite
Natrolite
Natrolite
Navajoite
Neighbourite
Nepheline
Nicolite
Nigrite (hydrocarbon)
Niter
Nelanite
Nontronite
Northrandite
Northupite
Noselite
Novacelite
Nsutite
Obsidian (rock)
Octahedrite (See Anatase)
Okenite
Oligoclase
Olivenite
Olivine
Onofrite
Onyx (See Calcite)
Opal
Orpiment
Orthite (See Allanite)
Orthoclase
Osirizawite
Overte
Ozocerite (hydrocarbon)
Paligorskite
Palladium
Parabutlerite
Paramontrosite
Pargasite
Pascoite
Pearceite
Penninite (See Penninite)
Penninite
Periclase
Petrified Wood (See Cryp. Quartz)
Petzite
Pharmacosiderite
Phillipsite
Phlogopite
Phosgenite
Phosphorite
Phosphuranylite
Pitchblende (See Uraninite)
Pittite
Plagioclase
Planchite
Platinum
Pleonaste (See Hercynite)
Plumbojarosite
Polybasite
Polyhalite
Potash Alum
Potash Clay (See Hydromica)
Powellite
Prase (See Cryp. Quartz)
Prehnite
Prochlorite
Prospite
Proustitte
Pseudobrookite
Pseudowavellite (See Crandallite)
Psilomeland
Ptololite
Pyargyrite
Pyrite
Pyrolusite
Pyromorphite
Pyrope (See Garnet)
Pyrophyllite
Pyroxene
Pyrhotite
Quartz
Quenselite
Rabbittite
Racewinite
Ravrite
Realgar
Rectorite
Red Ocher (See Hematite)
Redmergerite
Rohdochrosite
Rhodonite
Rhomboclas.
Riebeckite
Ridololite
Rockbridgeite
Roemerite
Rosasite
Roscoelite
Rose Quartz (See Quartz)
Rossite
Ruby Silver (See Proustitte and Pyrargyrite)
Ruthfurtherdine
Rutile
Sabugalite
Sagenite (See Rutile)
Salenite
Samarskite
Sanidine (See Orthoclase)
Saponce
Sapphirite (See Corundum)
Satin Spar (See Gypsum)
Scandium
Scapolite
Scheelite
Schoepite
Schroekingerite
Schordaita
Searlesite
Selenite (See Gypsum)
Selenium
Seligmannite
Senarmontite
Sepiolite
Sericite (See Muscovite)
Serpentine
Serpophite
Sherwoodite
Siderite
Sideronatrite
Siderotil
Silicified Bone and Wood (See Cryp. Quartz)
Silver
Simplotite
Sklodowskite
Smallite
Smetcrite
Smoky Quartz (See Quartz)
Sodalite
Soddyite
Sodium Analogue of Hewettite (See Barnesite)
Soulansite (See Wardite)
Spadaite
Spangolic
Specularite (See Hematite)
Spessarite (See Garnet)
Sphaerocobaltite (See Cobaltalcite)
Sphalerite
Sphene
Spinel
Spodumene
Stauronite
Steigerite
Stellerite
Stephanite
Sterretit (See Kolbeckite)
Stibiconite
Stibnite
Stiblite
Stolzite
Stringhantite
Stromeyerite
Strontianite
Sulfur
Sulfanite
Sussenite
Swartzite
Sylvanite
Sylite
Szabelyite
Szomolnokite
Tabbyite (hydrocarbon)
Talc
Tennantite
Tenorite
Tetradymite
Tetrahedrite
Thamasite
Thenardite
Thermonatrite
Thinolite
Thompsonite
Thorite
Thiolite
Thulite (See Zoisite)
Tiemannite
Tinstite
Titanite (See Sphene)
Titanoclinohumite
Tobermorite
Topaz
Torbernite
Tourmaline
Travertine (rock)
Tremolite
Tridymite
Troilite (See Pyrrhotite)
Trona
Troostite (See Willemite)
Tschekinite (See Chevkinite)
Tschermite (See Ammonia alum)
Tungstenite
Turquoise
Tryolite
Tuuyamunite
Uintaite (See Gilsonite)
Uintahite (See Gilsonite)
Umohoite
Uraninite
Uranite (See Autunite and Torbernite)
Uranocher (See Uranopilite)
Uranocircite (See Meta-uranocircite)
Uranophane
Uranopilite
Uranospathite
Uranospinate
Uranothallite (See Liebigite)
Utahite (See Carphosiderite)
Utahite (See Variscite)
Utah Onyx (rock)
Uvarite
Uvarovite (See Garnet)
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Vanadinite
Vanadium
Vanadium Hydromica (See Roscoelite)
Vandendriesscheite
Vanosite
Variscite
Vermiculite
Vesuvianite (See Idocrase)
Vitreoite (See Bertrandite)
Vivianite
Voglite
Volborite
Volchonskoite
Voltaite
Wad
Wardite
Wavelite
Weeksite
Wernerite (See Scapolite)
Wheelerite (hydrocarbon)
Whewellite
Wollastonite
Wulfenite
Wurtzilite (hydrocarbon)
Wurtzite
Xanthophyllite
Xenotime
Zeunerite
Zinkenite
Zinkonite
Zircoite
Zineite
Zonyite

Utah Minerals Listed by County

The mineral compilation of the State emphasizes the numerous varieties of minerals found in mines and mining districts. Listings of rock-forming minerals are only given where they may be of local significance; but it should be recalled that most of the common rock-forming minerals would be formed in each county. Counties which have many mines have extensive mineral listings, whereas those with little or no metallic production have limited minerals reported. Tooele County, for instance, with 188 minerals recognized, has the largest mineral listing; whereas Carbon County has only 2. The total number of minerals described in each county is indicated by the number given within parentheses following the county name.

**BEAVER COUNTY** (123)

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**BOX ELDER COUNTY** (67)

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Molybdenite  Pyrite  Sulfur  
Niter  Pyrolusite  Tourmaline  
Oligoclase  Rhodochrosite  Tremolite  
Orthoclase  Scheelite  Wad  
Osarizawaite  Sphalerite  Wollastonite  

RICH COUNTY  (12)

Azurite  Crypto. Quartz  Rhodochrosite  
Barite  Galena  Tennantite  
Calcite  Phosphorite  Tyuyamunite  
Cerussite  Pyrolusite  Wulfenite  

MORGAN COUNTY  (24)

Anglesite  Cuprite  Molybdenite  
Azurite  Galena  Monazite  
Barite  Gold  Pyrite  
Biotite  Hematite  Silver  
Cerussite  Jarosite  Smithsonite  
Chalcopyrite  Limonite  Tenorite  
Chrysocolla  Malachite  Uraninite  
Copper  Marcasite  Xenotime  

SALT LAKE COUNTY  (142)

Actinolite  Dufrenoysite  
Aikinite  Dyscarsite  
Alaskaitite  Enargite  
Allanite  Ephesite  
Allophane  Epidote  
Anglesite  Ferrimolybdite  
Anorthite  Forsterite  
Apinite  Foshagite  
Apjohnite  Galena  
Apophyllite  Garnet  
Aragonite  Glauberite  
Argentite  Gold  
Arsenopyrite  Godartite  
Aurichalcite  Gypsum  
Azurite  Gyrolite  
Barite  Halite  
Beaverite  Hematite  
Biotite  Hemimorphite  
Bismuth  Heulandite  
Bismuthinite  Hornblende  
Bismutite  Hydromagnesite  
Bloedite  Hydromica  
Bornite  Hypersthene  
Bournonite  Idocrase  
Brucite  Kaolinite  
Calaverite  Leverrierite  
Calcite  Limonite  
Caledonite  Linarite  
Cerargyrite  Ludwigite  
Cerussite  Magnetite  
Chabazite  Malachite  
Chalcocite  Markasite  
Chalcocypirite  Massicot  
Chlorite  Melanterite  
Cinnabar  Mercury  
Cobaltomeneite  Mesolite  
Cristobalite  Microcline  
Cuprobismutite  Mirabilite  
Dickite  Molybdenite  
Emplectite  Mordenite  
Fluellite  Muscovite  
Fluorite  Natrolite  
Galena  Onofrite  
Garnet  Opal  

PIUTE COUNTY  (93)

Albite  Gearsutite  Orthoclase  
Allophane  Goethite  Phosphuranylite  
Aluminate  Gold  Pinninite  
Alumite  Gypsum  Plumbobarite  
Anatase  Halite  Potash Alum  
Anglesite  Halloysite  Pyrolusite  
Anhydrite  Hematite  Pyrite  
Argentite  Hydrozincite  Pyrrhicite  
Autunite  Ilsemannite  Quartz  
Azurite  Jarosite  Radium  
Barite  Johannite  Realgar  
Beta-uranotlite  Jordosite  Pyrite  
Biotite  Karolinaite  Kaolinite  
Calcite  Kasolite  Palladium  
Celadonite  Leachienberge  Palygorskite  
Cerargyrite  Limonite  Pechblende  
Cerussite  Lithiophorite  Pezinitite  
Chabazite  Malachite  Pirssonite  
Chalcopyrite  Manganocalcite  Plumbogummite  
Chlorite  Micaspinite  Plumbogummite  
Cinnabar  Metacinnabar  Porphyrine  
Clinocllore  Metaterberrnite  Pyrrhotite  
Cobaltomeneite  Molybdenite  
Cristobalite  Montmorillonite  
Cuprobismutite  Mordenite  
Dickite  Muscovite  
Emplectite  Natrolinite  
Fluellite  Natrolite  
Fluorite  Nontronite  
Galena  Onofrite  
Garnet  Opal  

Chlorite 浙江
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| Anhydrite | Garnet | Gypsum | Halite | | |
| Antigorite | Gyssum | Pinninite | | | |
| Apatite | Harzinite | | | | |
| Azurite | Hecyninite | | | | |
| Brockite | Hydropirite | | | | |
| Calcite | Jarosite | | | | |
| Celestite | Kaolinite | | | | |
| Cerussite | Limonite | | | | |
| Chalcocite | Magnetite | | | | |
| Chalcopyrite | Malachite | | | | |
| Chalcopyrite | Malachite | | | | |
| Corundum | Microcline | | | | |
| Crypto. Quartz | Montmorillonite | | | | |
| Diopside | Muscovite | | | | |

| Opal | Orthoclase | Pinninite | Phlogopite | Prochlorite | Pyrite | Pyrolusite | Quartz | Rutile | Scapolite | Serpentine | Sphalerite | Thiorite | Tremolite | Wad | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alunite | Galena | Garnet | Gypsum | Halite | | | | | | | | | | | | 
| Anhydrite | Gyssum | Pinninite | | | | | | | | | | | | 
| Antigorite | Gypsum | Pinninite | | | | | | | | | | | | 
| Apatite | Harzinite | | | | | | | | | | | | 
| Azurite | Hecyninite | | | | | | | | | | | | 
| Brockite | Hydropirite | | | | | | | | | | | | 
| Calcite | Jarosite | | | | | | | | | | | | 
| Celestite | Kaolinite | | | | | | | | | | | | 
| Cerussite | Limonite | | | | | | | | | | | | 
| Chalcocite | Magnetite | | | | | | | | | | | | 
| Chalcopyrite | Malachite | | | | | | | | | | | | 
| Chalcopyrite | Malachite | | | | | | | | | | | | 
| Corundum | Microcline | | | | | | | | | | | | 
| Crypto. Quartz | Montmorillonite | | | | | | | | | | | | 
| Diopside | Muscovite | | | | | | | | | | | | 

| Anglesite | Dolomite | Montmorillonite | | |
| Argentite | Epidote | Olivenite | | |
| Azurite | Fluorite | Phosphorite | | |
| Balydonite | Galena | Psilomelane | | |
| Barite | Garnet | Pyrrygite | | |
| Bornite | Gold | Pyrite | | |
| Boulangerite | Goslarite | Pyrolusite | | |
| Bournonite | Gypsum | Pyromorphite | | |
| Brochantite | Halloysite | Quartz | | |
| Calaverite | Hemitheilite | Rhodonite | | |
| Calcite | Jamesonite | Serpentine | | |
| Cerargyrite | Lamonite | Silver | | |
| Cerussite | Lantorite | Sphere | | |
| Chabazite | Magnesioferrite | Spinel | | |
| Chalcanthite | Magnete | Stibnite | | |
| Chalcolite | Malachite | Tetrahedrite | | |
| Chalcopyrite | Manganite | Taumasite | | |
| Chlorite | Massicot | Tetrahedrite | | |
| Chrysocolla | Metallumite | | | | |
| Covellite | Mine | | | | |
| Cuprite | | | | | |
| Cuproskloodowskite | | | | | |
| Doloresite | | | | | |
| Donkeyite | | | | | |

| Anhydrite | Arsenopyrite | | |
| Aikinite | Arsenopyrite | | |
| Albite | Arsenopyrite | | |
| Allanite | Arsenopyrite | | |
| Analbite | Arsenopyrite | | |
| Anatas | Arsenopyrite | | |
| Andalusite | Arsenopyrite | | |

<p>| Actinolite | Anglesite | | |
| Adamite | Anhydrite | | |
| Aikinite | Anorthoclase | | |
| Albite | Arsenopyrite | | |
| Allanite | Arsenopyrite | | |
| Analbite | Arsenopyrite | | |
| Anatas | Arsenopyrite | | |
| Andalusite | Arsenopyrite | | |
| Anhydrite | Arsenopyrite | | |
| Antigorite | Arsenopyrite | | |
| Apatite | Arsenopyrite | | |
| Anorthoclase | Arsenopyrite | | |
| Arsenopyrite | Arsenopyrite | | |
| Axinite | Arsenopyrite | | |
| Azurite | Arsenopyrite | | |
| Barite | Arsenopyrite | | |</p>
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**UINTAH COUNTY (46)**

- Abelsonite
- Aluminite
- Analcite
- Apophyllite
- Aragonite
- Azurite
- Barytocalcite
- Bornite
- Burbankite
- Calcite
- Carbonate apatite
- Carnotite
- Cerargyrite
- Cerussite
- Chalcocite
- Chromite

**helconite**

- Collophane
- Dawsonite
- Dolomite
- Elpidite
- Fluorapatite
- Galena
- Garrelsite
- Glaucnite
- Gold
- Gypsum
- Halotrichite
- Hectorite
- Hematite
- Ilsemannite
- Tuyumunite
- Wurtzite

**UTAH COUNTY (164)**

- Chalcolite
- Chalcophanite
- Chalcopyrite
- Clinolite
- Cluorelite
- Clinoclore
- Coronide
- Cronadrote
- Candallite
- Credherite
- Cryptite
- Quartz
- Cryptomolane
- Cubanite
- Cuprite
- Cuprosolarite
- Davisonite
- Delmrite
- Delessite
- Deltite
- Dickite
- Dolomite
- Eardleyite
- Enargite
- Endellite
- Englishite
- Epidote
- Faratsibite
- Ferroglassite
- Fluorite
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Utah Minerals Listed by Crystal Systems

The minerals of the State fall into 8 categories: the 6 crystal systems, amorphous minerals, and minerals with an undetermined status. An alphabetical listing of the crystal systems follows with the minerals that fall into each system. The total number of minerals found in each system is indicated by the number in parentheses. It is apparent that the six crystal systems vary greatly in the number of minerals which represent them.

### AMORPHOUS (7)

- Allophane
- Cimolite
- Hisingerite
- Jordisite
- Limonite
- Metastibnite
- Opal

### HEXAGONAL (77)

- Alumian
- Alunite
- Ammoniojarosite
- Andersonite
- Ankerite
- Apatite
- Argentojarosite
- Arsenic
- Basaluminite
- Beaverite
- Beryl
- Beudantite
- Birmesite
- Bismuth
- Braitschite
- Brockite
- Brucite
- Burbankite
- Calcite
- Carbonate Apatite
- Carphosiderite
- Chabazite
- Chalcophyllite
- Cinnabar
- Cobaltocalcite
- Connellite
- Coquimbite
- Corkite
- Corundum
- Covellite
- Crandallite
- Davisonite
- Dehrite
- Deltaite
- Dolomite
- Eitelite
- Ettringite
- Fluorapatite
- Goyazite
- Graphite
- Greenockite
- Gyrolite
- Hematite
- Ilemnite
- Jarosite
- Lewistonite
- Magnesite
- Manganocalcite
- Mixite
- Molybdenate
- Natroalunite
- Natrojarosite
- Nepheline
- Niccolite
- Nolante
- Nsultite
- Osariza waite
- Plumbojarosite
- Proustite
- Pyrrhotite
- Pyrochryrite
- Pyromorphite
- Quartz
- Rhodochrosite
- Selenium
- Siderite
- Smithsonite
- Spangleite
- Tetradymite
- Thaumasite

### TETRADYMITE (beta)

- Tourmaline
- Tridymite (beta)
- Tungstenite
- Vanadinite
- Willemite
- Wurtzite
- Zinkenite

### ISOMETRIC (58)

- Aguilarite
- Altaite
- Ammonia alum
- Analcite
- Argentite
- Argyrodite
- Arsenobismite
- Bismuthinite
- Bismuthian bindheimite
- Bixbyte
- Bornite
- Bravoite
- Cerargyrite
- Chromite
- Clausthalite
- Cobaltite
- Copper
- Cuprite
- Digenite
- Donkeyite
- Embolite
- Fluorite
- Galena
- Garnet
- Gersdorffite
- Gold
- Halite
- Helvite
- Hercynite
- Japaite
- Magnesioferrite
- Magnetite
- Metacinnabar
- Monimolite
- Northupite
- Noselite
- Onofrite
- Palladium
- Perclace
- Petzite
- Pharmacosiderite
- Platinum
- Potash Alum

### MONOCLINIC (170)

- Acnite
- Actinolite
- Aegirite
- Allanite
- Aluminate
- Annabergite
- Antigorite
- Apjohnite
- Arsenosiderite
- Arsenopyrite
- Augite
- Azurite
- Balydonite
- Banesite
- Barytocalcite
- Bassanite
- Bascite
- Bayleyite
- Beidellite
- Beta-uranotile
- Bieberite
- Bilinite
- Biotite
- Bischofite
- Bismite
- Bloedite
- Boothite
- Boulangerite
- Brochantite
- Butterite
- Calaverite
- Carnotite
- Celadonite
- Chevkinite
- Chlorite
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Utah Minerals Listed by Chemical Class

The minerals of the State have been assigned to 21 chemical classes. Less than 40 percent of Utah's minerals fall into a single chemical class, such as a simple sulfide or oxide. Many fall into 2 chemical classes, such as azurite, which is listed as a carbonate, and also as a hydroxy-hydrous mineral. Several lie in 3 chemical classes and a few in 4 classes. One of the surprising results in this tabulation is the abundance of hydroxy-hydrous minerals. A total of 277 minerals, or 55 percent of the minerals of Utah, contain water. An alphabetical listing of the chemical classes follows with the minerals that fall into each class. The total minerals found in each class is indicated by the number in parentheses.

**ANTIMONATES-ANTIMONITES (4)**

- Bindheimite
- Bismuthian bindheimite
- Dyscarsite
- Nonimolite

**ARSENATES-ARSENITES (30)**

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**ARSENIDES (2)**

- Arseno-Jarosite
- Arsenosiderite

**BORATES (6)**

- Arsenospinite
- Zeunerite
- Axinite
- Braitschite
- Dumortierite
- Ludwigite
- Sussexite
- Szaibelyite

**CARBONATES (47)**

- Atacamaite
- Bischofite
- Bismoclite
- Carnallite
- Cerargyrite
- Connellite
- Coturnite
- Cryolite
- Daubreeite
- Embolite
- Fluellite
- Fluorite
- Aubrite
- Balydinite
- Barnesite
- Basaluminite
- Bassanite
- Bassetite
- Bayleyite
- Beaverite

**HYDROXYL-HYDROUS (319)**

- Burbankite
- Calcite
- Calcedonite
- Carbonate apatite
t
- Cerussite
- Cobaltocalcite
- Collophane
- Dawsonite
- Dolomite
- Eardleyite
- Eitelite
- Huntite
- Hydromagnesite
- Hydrozincite
- Leadhillite
- Liebigite
- Magnesite
- Malachite
- Manganocalcite
- Nahcolite
- Natron
- Rabbittite
- Rhodochrosite
- Rosselite
- Rutherfordite
- Scapolite
- Schroeckingerite
- Shortite
- Sidrite
- Smithsonite
- Strotianite
- Swartzite
- Thamasite
- Thermonatrite
- Thiolite
- Trona
- Tyrellite
- Vogelite
- Atacamite
- Bischofite
- Bismoclite
- Carnallite
- Cerargyrite
- Connellite
- Coturnite
- Cryolite
- Daubreeite
- Embolite
- Fluellite
- Fluorite
- Abernathyite
- Actinohite
- Adamite
- Alunite
- Allophane
- Aluminite
- Alunite
- Alunogen
- Ammonia alum
- Ammoniojarosite
- Analcite
- Andersonite
- Annabergite
- Anthophyllite
- Antigorite
- Antlerite
- Apjohnite
- Apophyllite
- Aronite
- Argentojarosite
- Arseniosiderite
- Arsenobisnite
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Goldichite
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Gunnite
Gypsum
Halotrichite
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Linarite
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Mirabilite
Natrolunitite
Natrojarosite
Neselite
Osarizawaite
Parabutlerite
Pickeringite
Pisanite
Pitticite
Plumbojarosite
Polyhalite
Potash Alum
Rhomboclase
Rosemerite
Scapolite
Schiroeckingerite
Sideronatrite
Siderotil
Spangolite
S/omolnokite
Thaumastite
Thenardite
Uranopilite
Voltaite
Zippeite
SULFIDES (45)
Acanthite

Geocronite
Jamesonite
Lorandite
Luzonite
Miargyrite
Pearceite
Polybasite
Proustite
Pyargyrite
Seligmansite
Stephanite
Tennantite
Tetrahedrite
Zinkenite

TELLURIDES (6)
Altaite
Calaverite
Hessite
Krennerite
Petzite
Sylvanite

TUNGSTATES (7)
Cuprotrungsiste
Ferberite
Heubnerite
Powellite
Scheelite
Stolzite
Wolframite

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Abernathyite
Andersonite
Autunite
Bassettite
Bayleyite
Beta-uranotile
Boltwoodite
Carnotite
Cuproslodowskiite
Fourmarierte
Johannesite
Kasolite
Liebigite
Meta-autunite
Metatorbermite
Metatyuyamunicite
Mottamnite
Nolanite
Pascoite
Pintadoite
Rauvite
Roscoelite
Rossite
Sherwoodrite
Simpsoleite
Steigerite
Tyuyamunicite
Uvanite
Vanadinite
Volborthite
Utah Minerals Listed Under Selected Metallic Elements

Thirty metallic elements were selected by the author for consideration in this compilation. Most of these elements have formed ore deposits of actual or potential economic value in Utah; few metallic elements such as chromium, cobalt, nickel, and tin occur in minerals that may have only mineralogical significance. An alphabetical listing of the thirty selected metallic elements is given below. After each element is a list of Utah minerals containing it. The numbers in parentheses indicate the number of minerals in each list.

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Allanite  Erythrite  Wavellite
Apjohnite  Gersdorffite  Xenotime
Axinite  Niccolite
Birnessite  Smalsite
Bixbyite  PHOSPHOROUS MINERALS (48)
Braunite  Apatite
Chalcophanite  Autinite
Coronadite  Basseeite
Crednerite  Borchkite
Cryptomelane  Carbonate apatite
Hetaerolite  Coapatite
Hollandite  Collophane
Huebnerite  Corkite
Jenkinsite  Crandallite
Lithiophorite  Davisonite
Mallardite  Dehrmite
Manganite  Delitaite
Manganocalcite  Diadochite
Nsutite  Englishite
Psilomelane  Flurosphalite
Pyrolusite  Gordonite
Quenselkaite  Goyazite
Rhodochrosite  Kolbeckite
Rhodonite  Lehuite
Rockbridgeite  Lewistonite
Sicklerite  Libethenite
Sussexite  Meta-autunite
Szaibelyite  Metastragenite
Wad  Metatorbernite
Wolframite  Meta-uranocrinite
MERCURY MINERALS (5)
Cinnabar  Metavarsavite
Mercury  Millisite
Metacinnabar  Miteapite
Onofrite  Monazite
Tiemannite  Montgomeryite
MOLYBDENUM MINERALS (7)
Ferrimolybdite  Owellite
Ilsemannite  Sabugalite
Jordisite  Saleite
Molybdenite  Sicklerite
Powellite  Sterettite
Umboltite  Tinticite
Wulfenite  Torbernite
NICKEL MINERALS (6)
Ananberghite  Turquis
Eardleyite  Uranospahite
TELLURIUM MINERALS (7)
Altaite  Platinum
Calaverite  Kolbeckite
Hessite  SELENIUM MINERALS (2)
Krennerite  Eucarite
Petzite  Ferrosilite
Sylvanite  TIN MINERALS (2)
Tetradyline
TITANIUM MINERALS (10)
Anatase  Cassiterite
Brookite  Samarskite
Chevikinite  Spheerre
Ilmenite  Titanoclinohumite
Leucosphenite
Pseudobrookite
Rutile
Samarskite
Sphene
TUNGSTEN MINERALS (8)
Cuprotungsite  Anatase
Ferberite  Brookite
Huebnerite  Chevikinite
Powellite  Ilmenite
Scheelite
Stibnite
Sphene
Tungstenite
Wolfamite
VANADUIM MINERALS (35)
Barnesite  Cinnabar
Calciovolborthite  Coconinoite
Carnotite  Corvusite
Coconinoite  Desclioizite
Cobaltite  Doloresite
Doloresite  Femandinite
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Corvusite  
Descloizite  
Ferrvanite  
Grantsite  
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Metatyuyamunite  
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Roscoelite  
Rossite  
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Steigerite  
Tyuyamunite  
Vanoite  
Volborhite  

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Sphalerite  

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Biotite  
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Goethite  
Hematite  
Limonite  
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Pyrite  
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Carnotite  

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Mottramite  

ZINC (2)  
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Mottramite  

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Geocronite  
Jamesonite  
Pyargyrite  
Stephanite  
Sbinite  
Tetrahedrite  

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Arsenobismite  
Arsenopyrite  
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Chenevixite  
Chrysocolla  
Clinochlase  
Conichalcite  
Connellite  
Copper  
Covellite  
Cuprite  
Cyanotrichite  
Enargite  
Erelite  
Geocronite  
Metazeunerite  
Mimetite  
Mixite  
Olivenite  
Pearceite  
Pharmacosiderite  
Pitticite  
Proustit  
Scordite  
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Tenorite  
Tetrahedrite  
Tyrrole  
Uranospinite  
Zeunerite  

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Chrysocolla  
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Conellite  
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Cuprite  
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Erelite  
Famatinite  
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Malachite  
Metazeunerite  
Mixite  
Olivenite  
Spangolite  
Tennantite  
Tenorite  
Tetrahedrite  
Tyrrole  
Zeunerite  

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Arseniosiderite
Arsenopyrite
Biottite
Bixbyite
Borickite
Carphosiderite
Chalcopyrite
Chenevixite
Epidote
Garnet
Hematite
Idocrase
Jamesonite
Jarosite
Limonite
Magnetcite
Marcasite
Melaniterite
Pharmacosiderite
Pitticite
Plumbojarosite
Pseudobrookite
Pyrite
Pyrrhotite
Scorodite
Sicklerite
Tennantite
Tourmaline

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Bindheimite
Cerussite
Cotunnite
Galena
Geocronite
Jamesonite
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Linarite
Mimetcite
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Phosgenite
Plumbojarosite
Pyromorphite

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Sicklerite

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Braunite
Manganite
Psilomelane
Pyrolusite
Rhodochrosite
Sicklerite
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Cerargyrite
Peacockite
Proustite
Pyargyrite
Silver
Stephanite
Tetrahedrite

SILVER (8)
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Peacockite
Proustite
Pyargyrite
Silver
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Tetrahedrite

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Sphene

TUNGSTEN (1)
Scheelite

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Carnotite
Meta-uranocircite
Metazeunerite
Schroekingite
Sklodowskite
Soddyite
Uraninite
Uranophane
Uranospinite

Weeksite
Zeunerite

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BARITUM (1)
Barite

CERIUM (1)
Monazite

COPPER (4)
Azurite
Cuprite
Malachite
Torbernite

GOLD (1)
Gold

IRON (11)
Augite
Biotite
Chalcopyrite
Garnet
Hematite
Idocrase
Limonite
Magnetcite
Marcasite
Pyrite
Tourmaline

LEAD (4)
Anglesite
Cerussite
Galena
Osarizawaite

MILLARD COUNTY

BISMUTH (1)
Bismutite

COPPER (5)
Azurite
Chalcopyrite
Cuprite
Malachite
Osarizawaite

GOLD (1)
Gold

MANGANESE (4)
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Pyrolusite
Rhyodochrosite
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Bornite
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Chalcantbite
Chalcocite
Chalcopryrite
Chrysocolla
Copper
Covellite
Cuprite
Cuprosklodowskite
Donkeyite
Eucarite
Johannite
Libethenite
Malachite
Metatorbernite
Metazeunerite
Torbernite
Uranospathlite
Voglite

GOLD (1)
Gold

IRON (17)
Aegirite
Augite
Bornite
Chalcopyrite
Chromite
Garnet
Gersdorffite
Goethite
Hematite
Jarosite
Limonite
Magnete
Marcasite
Montroseite
Nolanite
Pyrite
Tourmaline

LEAD (3)
Clausthalite
Galena
Gummite

MANGANESE (2)
Manganite
Psilomelane

MOLYBDENUM (3)
Ilsemannite
Jordisite
Molybdenite

NICKEL (3)
Erythrite
Gersdorffite
Smaltite

PHOSPHORUS (9)
Apatite
Autunite
Libethenite
Metatorbernite
Phosphuranylite
Sabugalite
Saleeite
Torbernite
Uranospathlite

SILVER (1)
Eucarite

TITANIUM (2)
Sulfite
Titanoclinohumite

URANIUM (30)
Andersonite
Autunite
Bayleyite
Becquerelite
Beta-Uranotile
Boltwoodite
Carnotite
Coffinite
Cuprosklodowskite
Gummite
Johannite
Liebigite
Metatorbernite
Metatyuyamunite
Metazeunerite
Novacekite
Phosphuranylite
Rutherfordite
Sabugalite
Saleeite

VANADIUM (19)
Calciovolborthite
Carnotite
Cooomanoite
Corvusite
Dioresite
Hewettite
Melanovanadite
Metaarosite
Metatyuyamunite
Montroseite
Naveloite
Nolanite
Paramontroseite
Pascoite
Pintadoite
Roscoelite
Simplotite
Tyuyamunite
Vanoxite

ZINC (1)
Sphalerite

SEVIER COUNTY

COPPER (5)
Azurite
Chalcantbite
Chalcocite
Chalcopyrite
Malachite

IRON (10)
Chalcopyrite
Epidote
Garnet
Hematite
Hercynite
Jarosite
Limonite
Magnetite
Panninite
Pyrite

LEAD (2)
Cerussite
Galena

MANGANESE (2)
Pyrolusite
Wad

PHOSPHORUS (1)
Apatite

STRONTIUM (1)
Celestite

TITANIUM (1)
Rutile

THORIUM (1)
Thorite
ZINC (1)
Sphalerite

SUMMIT COUNTY

LEAD (12)
Anglesite
Barydonite
Beaverite
Bornite
Chalcopyrite
Chenevixite
Chrysocolla
Clinoclase
Conichalcite
Copper
Covellite
Cuprite
Cuprotungstite
Desclozite
Malachite
Olivenite
Rosasite
Sulanite
Tennantite
Tenorite
Tetrahedrite
Tyroline

ARSENIC (22)
Adamite
Arseniosiderite
Arsenopyrite
Austinite
Beudantite
Carminite
Chenevixite
Clinoclase
Cobaltite
Conichalcite
Copper
Covellite
Cuprite
Cuprotungstite
Desclozite
Malachite
Olivenite
Rosasite
Sulanite
Tenrantite
Tenorite
Tetrahedrite
Tyroline

BARIT (2)
Barite
Psilomelane

COPPER (15)
Azurite
Barydonite
Bornite
Bournonite
Brochantite
Chalcanthite
Chalcopyrite
Chrysocolla
Covellite
Cuprite
Linarite
Malachite
Olivenite
Tetrahedrite

PHOSPHORUS (3)
Mimetite
Phosphorite
Pyromorphite

SILVER (5)
Argentite
Cerargyrite
Pyargyrite
Silver
Tetrahedrite

TELLURIUM (1)
Calaverite

ZINC (4)
Godarite
Hemimorphite
Sphalerite
Tetrahedrite

BISMUTH (5)
Aikinite
Bismite
Bismuth
Bismuthinite
Bismutite

GOLD (2)
Calaverite
Gold

IRON (48)
Actinolite
Allanite
Argentojarosite
Arseniosiderite
Arsenopyrite
Augite
Axinite
Beaverite
Beidellite
Beudantite
Biotite
Bornite
Carminite
Carphosiderite
Chalcopyrite
Chenevixite
Cobaltite
Epide
e
Ferberite
Ferrimolybdate
Ferrisymplesite

BARIUM (3)
Barite
Danburite
Psilomelane

BERYLLIUM (3)
Allanite
Bertrandite
Beryl

CERIUM (3)
Allanite
Monazite
Samarckite

TOOELE COUNTY

ANTIMONY (8)
Boulangerite
Jamesonite
Monimolite
Pyargyrite

COPPER (27)
Aikinite
Garnet
Hedenbergite
Hematite
Hornblende
Hypersthene
Iduspersite
Idocrase
Ilmenite
Jamesonite
Jarosite
Jeffersite
Limonite
Magnesite
Melanterite
Natrojarosite
Nontronite
Olivine
Pharmacosiderite
Plumbojarosite
Pyrite
Pyrrhotite
Scorodite
Siderite
Siderotil
Tennantite
Tourmaline
Wolframite
LEAD (16)
Aikinite
Anglesite
Beaverite
Beudantite
Boulangerite
Carminite
Cerussite
Descloizite
Galena
Jamesonite
Mimetite
Monimolite
Plumbojarosite
Pyromorphite
Stolzite
Wulfenite
MANGANESE (10)
Allanite
Axinite
Huebnerite
Manganite
Psilomelane
Pyroclase
Rhodochrosite
Rhodonite
Wad
Wolframite
MERCURY (2)
Cinnabar
Metacinnabar
MOLYBDENUM (4)
Ferrimolybdate
Molybdenite
Powellite
Wulfenite
PHOSPHORUS (6)
Apatite
Mimetite
Monazite
Pyromorphite
Turquoise
Variscite
SILVER (9)
Argentite
Argentojarosite
Cerargyrite
Hessite
Proustite
Pyargyrite
Silver
Stephanite
Tetrahedrite
TELLURIUM (2)
Calaverite
Hessite
TIN (1)
Samarosite
TITANIUM (5)
Anatase
Ilmenite
Rutile
Samarosite
Sphere
TUNGSTEN (7)
Cuprotungstate
Ferberite
Huebnerite
Powellite
Scheelite
Stolzite
Wolframite
URANIUM (2)
Samarosite
Uraninite
VANADIUM (2)
Deschloizite
Sulvanite
ZINC (11)
Adamite
Aurichalcite
Austinite
Deschloizite
Hemimorphite
Hydrozincite
Rossite
Smithsonite
Sphalerite
Tetrahedrite
Wurtzite
ZIRCONIUM (1)
Zircon
ZIRCONIUM (1)
Elpidite
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